



EXCLUSIVELY DOOR MANUFACTURERS

KINNEAR

ROLLING DOORS

Foreword

The Kinnear Manufacturing Company, since its founding 40 years ago, has devoted its exclusive efforts to the manufacture of doors and door operating equipment. By pioneering the practicability of the upward opening type of door, both in the field and in the factory, Kinnear has developed a door of ingenious design, constructed of high quality materials by competent and skilled mechanics. Through this leadership in the field they have naturally originated the most important improvements in door design. And today, Kinnear Doors are recognized the world over for their efficiency and economy for both service and fire protection purposes.

Every Kinnear Door is built to meet the individual requirements and doors now in excellent operating condition after 40 years of daily service give mute evidence of their efficient design and reliability of manufacture. The purchase of a door bearing the "Kinnear" name is not only your assurance of an excellent device, on which maintenance has proven to be negligible, but also the permanent availability of genuine replacement service in case of accidental damage. These are two considerations which experience has shown to be more important than that of first cost, if the purchase is to represent a paying investment.

While designed primarily for doorways and window openings in all classes of buildings, Kinnear Doors are now being successfully adapted for a wide range of special uses. So, wherever a closing device is required, the possible application of Kinnear economies should be investigated.

**KINNEAR WILL DESIGN AND BUILD ANY KIND
OF UPWARD ACTING DOORS FOR ANY KIND OF
AN OPENING—CONSULT US.**

*See Page 2
For Index*



KINNEAR

ROLLING DOORS



Ample and modern manufacturing facilities devoted exclusively to the making of Kinnear Doors and Door Operating Equipment. . . . The Kinnear Plant and Administration Building, Columbus, Ohio.

The Kinnear Manufacturing Co.

820-870 FIELD AVENUE - COLUMBUS, OHIO

BRANCH OFFICES

BOSTON, MASS., 294 Washington Street
NEW YORK, 30 Rockefeller Plaza, R.C.A. Building
PHILADELPHIA, PA., 1321 Arch Street
WASHINGTON, D. C., 410 Bond Building
NEW ORLEANS, LA., 530 Hibernia Bank Building

PITTSBURGH, PA., 1052 Century Building

CLEVELAND, OHIO, 7704 Carnegie Avenue
CINCINNATI, OHIO, 6518 Tyne Avenue
DETROIT, MICH., 7710 Woodward Avenue
CHICAGO, ILL., 1919 Randolph Wells Building
SAN FRANCISCO, CALIF., 361 Brannan Street

AGENTS IN PRINCIPAL CITIES



DESIGNED and BUILT to MEET

INDIVIDUAL REQUIREMENTS

KINNEAR PRODUCTS

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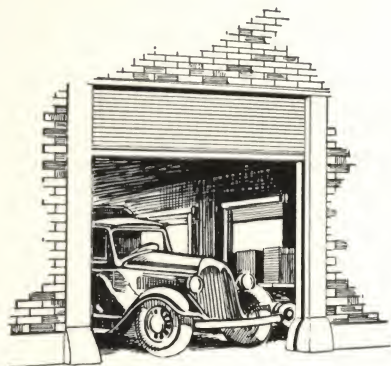
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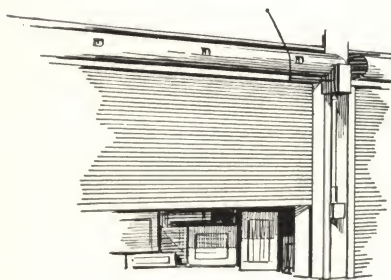
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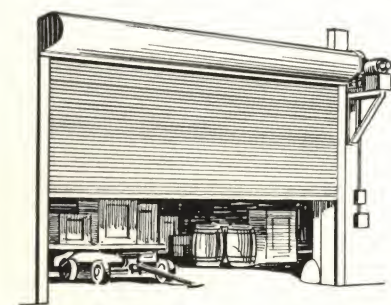
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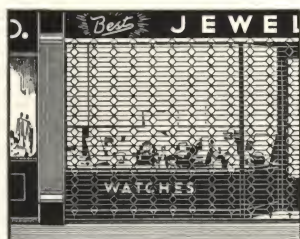
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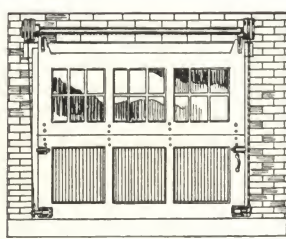
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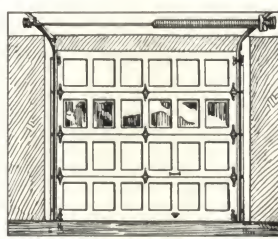
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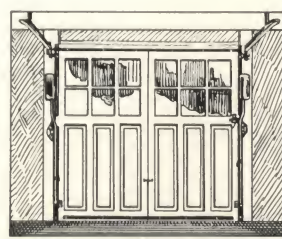
METAL
ROLLING GRILLES



WOOD AND STEEL
BIFOLDING DOORS



WOOD AND STEEL
ROL-TOP GARAGE DOORS



TIP-TOP GARAGE
DOOR HARDWARE

Salient Advantages of **KINNEAR ROLLING DOORS**

AS REPORTED BY USERS THROUGH- OUT THE WORLD

The advantages Kinnear Rolling Doors afford have been proved for the past 40 years. With thousands of doors giving dependable service in all classes of buildings—Industrial and Mercantile Buildings, Public and Private Edifices of Classic Design, Piers, Ware and Freight Houses and numerous special types of structures—users in every part of the world have had an opportunity to witness their efficiency and economy. Besides the convenience, low cost of maintenance and reliability of manufacture, advantages briefly listed below are the most important of those for which Kinnear Rolling Doors are universally endorsed.

1. EASY, QUICK OPERATION

Operating upward, clearing all ground obstructions and accurately and permanently counter-balanced, Kinnear Doors operate with speed, ease and smoothness . . . effecting substantial savings in time.

2. SAVING SPACE

When open, Kinnear Doors are stowed overhead, where space is cheap—not requiring expensive floor or wall space. Merchandise or materials can be stored within a few inches of either side of the door, without hampering its operation.

3. GREATER DURABILITY

By virtue of their upward-action, Kinnear Doors are out of the way, less subject to damage from moving objects, wind and elements. But still more important, as designed by experienced door engineers, no point has been overlooked in fabricating a door that will best withstand the effects of the elements and hard, rough usage. Because of their inherent durability and Kinnear's nation-wide servicing organization, maintenance cost is negligible.

The Columbus Incinerator, on which seven Kinnear Doors are installed . . . five Steel Rolling Doors, chain operated, ranging from 16 to 22 ft. in width and from 8 ft. 4 in. to 10 ft. 6 in. in height; and two special panelled Steel Bifolding Doors 10x10 ft. in size



4. FIRE PROTECTION

Kinnear Metal Rolling Doors are fire resisting, providing an effective guard in case of fire. When fire protection is of primary importance the use of Kinnear Automatic Labeled Rolling Doors reduces insurance premiums substantially. Besides endorsement by the Underwriters as a fire door and bearing their label, they can also be used for service purposes, providing customary Kinnear economies of operation.

5. MAXIMUM SAFETY

Kinnear Doors are built with a high factor of safety throughout. Strength and quality are in excess of mechanical requirements. Springs are individually tested. Automatic Doors are provided with a safety drop governor, retaining locks and other special safety features for the protection of human life and property.

6. WEATHER GUARD

Through the use of special endlocks, sealing devices and accurately fabricated parts, Kinnear Doors are made weather-tight at all joints. Curtain or panels are of weather resisting materials and given a high grade protective coating.

7. ECONOMICAL INSTALLATION

Kinnear Doors are designed to be installed with the minimum preparation of the opening. The form in which doors are shipped facilitates rapid and economical erection.

8. NEAT APPEARANCE

Curtain or panels are of neat design. All mechanism is neatly arranged, with concealed parts wherever possible. Open or closed, Kinnear Doors give the opening a clean-cut appearance and can be designed to harmonize with the architectural treatment of the building.

9. THEFT-PROOF

Strongly built and with provisions for locking, Kinnear Doors are dependable guards against thieves, marauders and rioters.

One of hundreds of cases where buildings equipped with positive automatic closing Kinnear Fire Shutters were saved from fire in adjoining buildings. Hollywood Telephone Exchange, Hollywood, California



K

A COMPLETE DOOR SERVICE

What it means to Architects, Contractors and Owners

To specify Kinnear Doors means more than the selection of a superior product . . . it is your assurance of a complete door service. The Kinnear Organization assumes responsibility at the time they are delegated to study the opening problem. A staff of experienced door Engineers design the door to most efficiently meet the conditions of the particular requirements. For every Kinnear Door is individually tailored for the job.

After the design has been approved the door is built by experienced door mechanics in the largest and best equipped plant in the industry. When ready for installation, Kinnear Trained Erection Crews are available to see that it is properly installed and put in perfect operation. When this has been accomplished, only Kinnear's initial responsibility has been realized.

For Kinnear still remains on the job, from standpoint of service. Records and patterns of every Kinnear Door sold are kept in fireproof vaults. Consequently, a Kinnear Door is never an orphan. In case of accidental damage, genuine parts can be promptly supplied . . . and because of Kinnear's design, replacements can be easily and economically made.

Experience has shown that an orphan door is like an orphan car. It quickly loses its value. It cannot give satisfactory service with make-shift parts. And many orphaned doors are worthless because of the complete inability to secure replacement parts.

Through a nation-wide service organization, Kinnear is as close as your telephone, and will always be found to be equally interested in servicing present installations as to sell new doors.

TO ARCHITECT

Besides operating efficiency and economy, Kinnear Doors offer the compactness, safety and simplicity that is vital to the Architect in designing and specifying equipment. Frequently the Architect does not have the time for making exhaustive studies and tests of a product, so finds it necessary to rely on the experience and integrity

of the source of supply. Consequently, the long service records of Kinnear Doors have provided a reputation sufficiently reliable to permit him to readily specify "Kinnear." And when he insists that his specifications be followed he has the assurance a superior device is being used . . . one on which performance has shown that the first cost is generally the final cost. Architects also highly regard the co-operation and assistance Kinnear Engineers offer, in the solution of door problems.

A study of the specifications of the country's foremost projects reveals that leading Architects have predominate preference for Kinnear Doors.

TO CONTRACTOR

Quick and accurate estimates, accurate designs and working drawings, entire co-operation of a trained construction crew at the time of installation in complying with the building procedure plan, are a few of the reasons Kinnear Doors have won such favor with Contractors. By being relieved of the responsibility of speedy and proper installation they have learned that by accepting the Kinnear bid they are money ahead . . . not to mention the value to their reputation, by affording the Architect and Owner the greatest ultimate satisfaction.

TO OWNER

Every advantage Kinnear Doors afford is naturally of interest to the Owner. But even more important than the numerous operating economies, is the fact that the first cost of Kinnear Doors is generally the final cost. Inherently durable, they give years of uninterrupted, efficient service. This is evidenced by hundreds of doors that are still in daily service after more than 30 years of hard usage. If a door purchase is to represent a sound investment,

the performance of Kinnear Doors, coupled with Kinnear's permanently available replacement service for cases of accidental damage, cannot be overlooked.

Scope of Kinnear Service

1. Branch Offices and Sales Representatives, trained and experienced in door engineering, strategically located throughout United States and many foreign countries.
2. Study of your opening problem to determine your exact requirements.
3. Staff of experienced door engineers prepare drawings of doors to meet your individual needs.
4. Doors are carefully fabricated in a completely equipped plant by experienced mechanics, and of the finest quality materials.
5. Erection Service by trained workmen.
6. Maintenance of records and patterns of every Kinnear Door installed makes replacement parts always available in case of accidental damage.
7. Nation-wide service organization.
8. Every door is backed by the integrity of a company which has faithfully served the public for the best part of a half century.

The Kinnear Designing Department. This corps of trained and experienced door engineers are maintained at all times for designing every Kinnear Door to meet the individual need

The Kinnear Trained Erection Crew at work. Their experience in the proper installation of doors relieves the purchaser of all erection responsibility and is a service many Kinnear buyers are specifying



K

DESIGNED and BUILT to MEET

INDIVIDUAL REQUIREMENTS

STEEL ROLLING SERVICE DOORS

GENERAL CONSTRUCTION

Kinnear Steel Rolling Doors and Shutters are sold under two distinct classifications, viz: Service Doors that are designed for openings which do not require an Underwriters' label, and where insurance is not a consideration; and Automatic Doors which are built for places where the protection of human life and property against fire is of prime importance. However, the Service Doors described here, by the very nature of their construction are fire-repellant and afford a certain amount of fire protection. Details of the Fire Door will be found on pages 12 to 16 inclusive.

The curtain proper is made of open hearth, copper-bearing steel interlocking slats heavily galvanized by the Kinnear Tite-Cote hot process (also of pure iron, stainless steel, aluminum, bronze, and other metals) and equipped with endlocks of suitable material. This curtain is coiled upon a barrel journaled in heavy cast iron brackets and travels in steel guides mounted on the side of the opening. Helical springs enclosed in the barrel provide perfect counterbalance. A hood of suitable design and metal is furnished for covering the barrel and coil.

To fully understand the designing skill and the high quality materials and workmanship put in this renowned door, see pages 6 and 7. Though built to this high standard, every Kinnear Door is especially tailored to meet the individual requirement . . . no doors being carried in stock.

In case the type of door suited to your exact needs is not illustrated in this catalog, write Kinnear Engineers for special recommendations. Those illustrated are only the types in most general use.

METHODS OF OPERATION

The methods of operation most commonly used in Kinnear Steel Rolling Doors are:

Push-up—Manually opened and closed by means of handles in bottom plate. (Not recommended for doors exceeding 80 sq. ft. in area.)

Chain—Mechanically operated by hand chain, sprocket and reduction gearing.

Crank—Mechanically operated by hand crank, shafting and reduction gearing.

Power—Driven by electric motor, controlled by one or more conveniently located push buttons or photo-electric control stations.

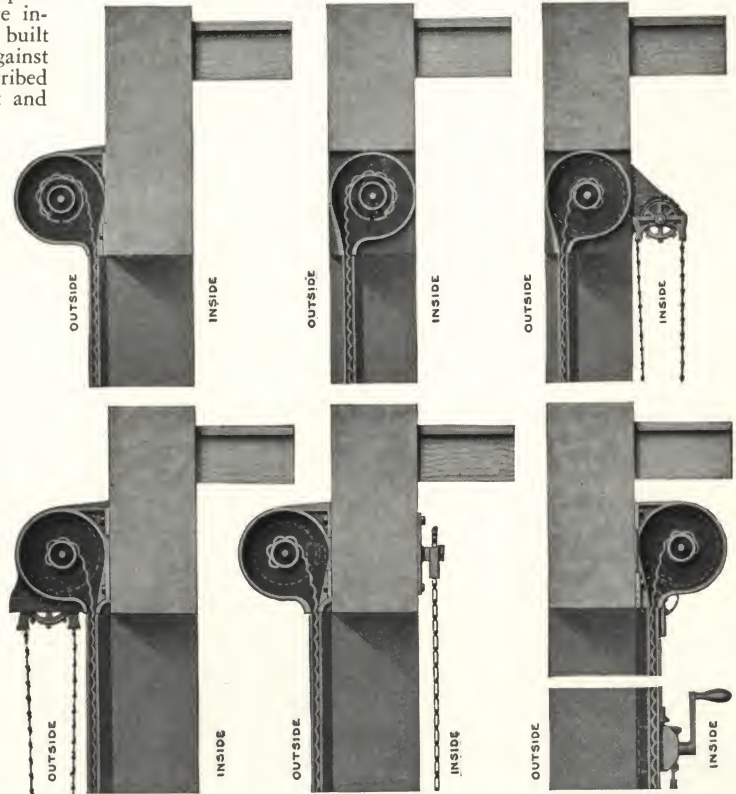
Easy and rapid operation of Kinnear Service Doors is obtained

by careful calculation of size of spring employed in counterbalancing, the liberal use of annular roller and thrust bearings, machine molded gears and other refinements of this character. Springs are carefully tested before being applied to doors.

The selection of the type of operation is usually determined by the size of door and service required.

INSTALLATION

The illustration below shows the most common methods of installing Kinnear Steel Rolling Doors. When the coil is mounted on the face of the wall, as in the case of old buildings and where



headroom is ample, the brackets and coil are entirely above the bottom of the lintel and the edges of the guides are flush with the face of the opening jambs. Where headroom is limited, the door is then mounted in the opening, in which case the brackets and coil are located on the jambs or in reveals provided in the jambs.

If Kinnear Engineers have the opportunity to work with the Architect and Engineer during the designing period of the job, it is frequently possible to conceal all working parts of the door, making the curtain when in the closed position, the only visible part. The door may be encased by wood, marble, bronze and other materials when appropriate.

A Kinnear Steel Rolling Door for a crane opening in the Charleston Navy Yards. 25 ft. wide by 31 ft. high.

Part of the Battery of 119 Kinnear Doors installed in St. John's Terminal, New York City. Consider the tremendous amount of space saved by their upward operation.



K

KNOWN FOR LASTING SERVICE

..... and Here are the Reasons

Like the motor in your car or the works in your watch, a considerable portion of the dollar value of a Kinnear Steel Rolling Door is not visible. The following points, therefore, are given in order that the discriminating and economical purchaser can see the many exclusive and cleverly designed construction features hidden under its hood. Numbers correspond to those on the drawing on the opposite page.

1. Brackets—Uniformly cast in special moulds, eliminating variations found in sheet steel types. All surfaces are smooth and even. Metal of gray iron of uniform texture with high-test value and suitably proportioned with large factor of safety. Bracket mouth and stops are cast integral, at an established distance between center and back of bracket, thus providing a throat which permits smooth operation without friction and eliminates the excessive drag of curtain over the stops.

Bearings of large proportions are provided for barrel spindles.

2. Hoods—Neatly formed hot galvanized sheet steel hoods to fit contour of brackets provide complete housing for curtain coil. Hood is attached to the bracket flanges with heavy screws and is suitably reinforced with beads or flanges to prevent deflection.

3. Curtain—Composed of interlocking slats of hot galvanized copper-bearing steel, rolled in specially designed machines, in order to provide exactly formed hinged joints. These joints are especially designed to provide free and easy hinging and to shed water from the curtain. Slat is formed of suitable sections to permit uniform coiling on the spring barrel and operate freely in the curtain guides.

Endlocks are furnished attached to edges of curtain to hold curtain in alignment and prevent slats from rubbing and wearing against guides.

4. Spring Barrel—Each door is provided with a heavy steel barrel of sufficient diameter and thickness to avoid deflection in excess of .03 inches per lineal foot of barrel.

This barrel serves a three-fold purpose, viz:

1. Encases the counterbalancing mechanism.
2. Serves as the load carrying beam.
3. Provides an axis around which curtain coils.

5. Counterbalance—Oil-tempered helical springs wound from especially heat-treated steel and tempered with oil, providing a permanent and simple means of counterbalance. Each one of these springs is individually tailored and tested for each job.

6. Rings—Rings of malleable iron of special involute shape, designed to coil the curtain with a uniformly increasing diameter. Size adaptable to provide an initial diameter sufficient to insure uniform and constant counterbalance for all points of the door travel.

7. Shafting or Tension Rod—Of sufficient size to carry the torsional load of the spring counterbalance and to be of cold rolled polished steel in order to eliminate friction in all bearings.

8. Barrel Plugs—Heavy cast iron plugs machined to fit perfectly into the ends of barrel and having Kinnear special design for holding the ends of the spring and eliminating the usual excessive strain at the spring ends. The life of the Kinnear counter-balancing unit is greatly increased by this special attachment, as the danger of a fracture, which usually occurs at the spring connection, is particularly minimized.

9. Reduction Gearing—Suitable reduction gearing cast with teeth, machine molded from machine finished patterns. Designed with a high factor of safety and reduction ratio individually suited for operating the door at the maximum speed consistent with the minimum effort.

10. Chain Guard—Sprocket wheel provided with a guard, especially designed to properly guide and prevent hand chain from leaving the wheel.

11. Operating Chain—Heavily galvanized, and of design and strength to prevent stretching and to provide a comfortable hand grip.

12. Guides—Fabricated from structural steel angles. The Kinnear guide is designed with groove depths varying from 2 to 8 inches, depending upon the width of the door. This guide is especially adaptable for doors exposed to heavy wind pressure and is packed out from the face of the wall in order to accommodate the especially designed throat of the bracket.

13. End Locks—Made of malleable iron and placed on alternate slats. For retaining slats in place, protecting them against rubbing in the guides and to maintain the curtain in alignment.

14. Bottom Bar—Fabricated from structural steel angles. Bottom bars are especially designed to reinforce the curtain against wind pressure and are made with two angles of equal weight, instead of one, in order that they balance and hang freely on the curtain to eliminate binding friction in the guides. This bar provides contact for the curtain against the sill when the door is closed and against the stops on the bracket when the door is open, retaining the bottom of the curtain in a correct position suitable to the initial movement in operation.

15. Slat—Made of different sizes to accommodate the width of the door. Slat is designed to have a high crown to provide rigidity. The hinging centers are so arranged to give free action in the curtain and to properly nest when coiled on the barrel. Standard slats are rolled from copper-bearing steel and hot galvanized. The gauge of metal used in the slats depends upon the width of the opening. In every instance the size and gauge of slat is selected to best meet customer's requirements.

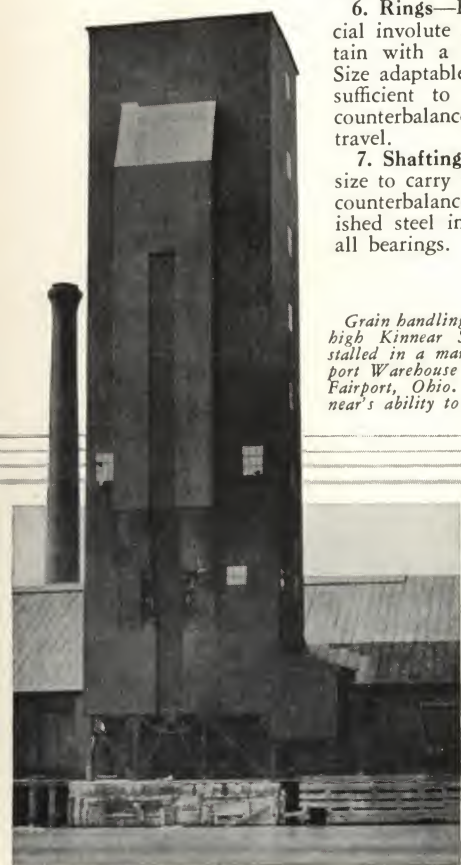
Slats can be furnished, when desired, in stainless steel, aluminum, bronze or copper.

16. Adjustment Wheel—Mounted on the outside of the bracket, in order to be easily accessible. Kinnear counterbalance is so designed that the initial tension can be increased or decreased by use of this wheel, which is mounted on the tension rod. It is of heavy cast iron construction and locked to the bracket after adjustments are made.

Grain handling facilitated by this 95-ft. high Kinnear Steel Rolling Door installed in a marine tower for the Fairport Warehouse and Elevator Company, Fairport, Ohio. An example of Kinnear's ability to handle tough jobs

Illustrating how Kinnear Doors harmonize with any modern architectural design. Through the use of various metals, very attractive effects can be obtained

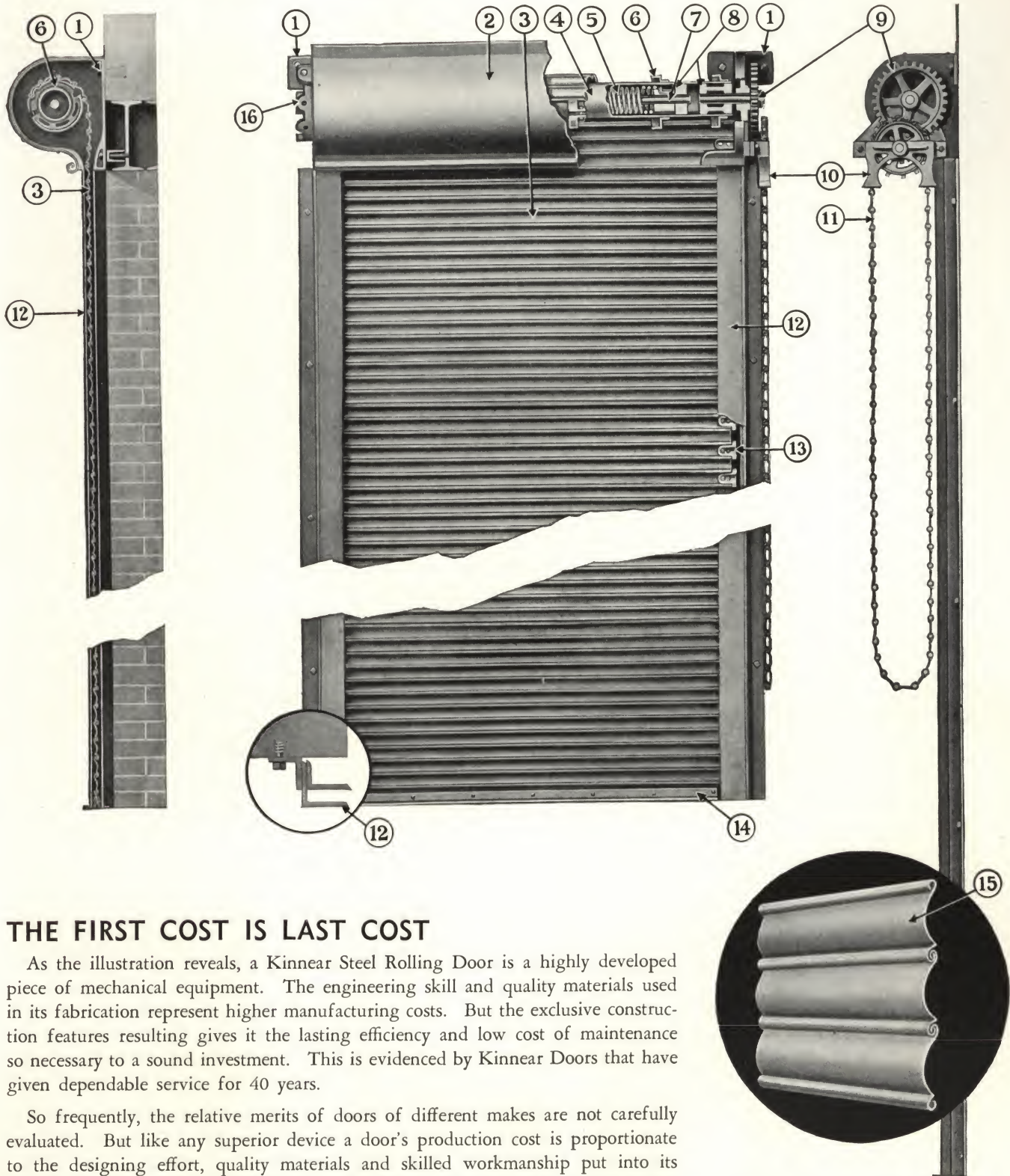
A battery of Kinnear Steel Rolling Doors installed for the Frankford Grocery Co., Philadelphia, Pa. Conserving space and operating rapidly, these doors facilitate quick handling of merchandise



DESIGNED and BUILT to MEET

INDIVIDUAL REQUIREMENTS

F.H. 20—CHAIN HOIST TYPE—FACE WALL MOUNTING



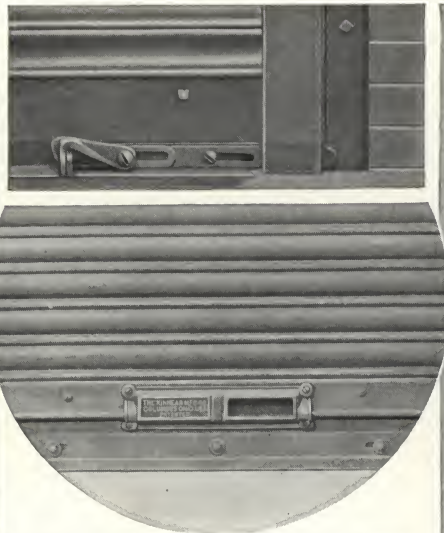
THE FIRST COST IS LAST COST

As the illustration reveals, a Kinnear Steel Rolling Door is a highly developed piece of mechanical equipment. The engineering skill and quality materials used in its fabrication represent higher manufacturing costs. But the exclusive construction features resulting gives it the lasting efficiency and low cost of maintenance so necessary to a sound investment. This is evidenced by Kinnear Doors that have given dependable service for 40 years.

So frequently, the relative merits of doors of different makes are not carefully evaluated. But like any superior device a door's production cost is proportionate to the designing effort, quality materials and skilled workmanship put into its manufacture. And though the first cost of a Kinnear Door may be slightly higher than cheaper designs, the ultimate service it affords makes it the cheapest in the end.

*For clearance requirements for
F.H. 20, see page 10*





Top: Locking of the manually operated doors is accomplished by padlocking the slide bolt, which contacts a stop in the guide, to the clip welded on the bottom plate of the door. This can be arranged for locking on either, or both sides of the door.

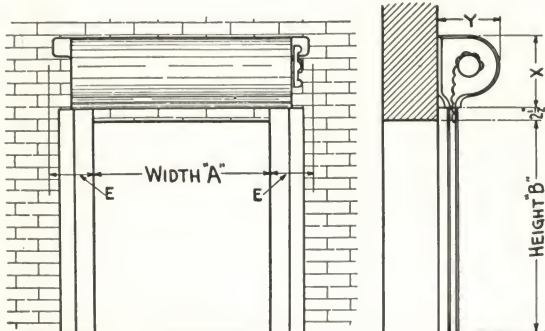
Above: Showing the convenient lifting handle provided on the bottom plate of all manually operated push-up doors.



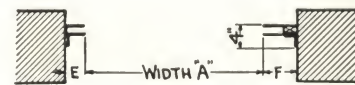
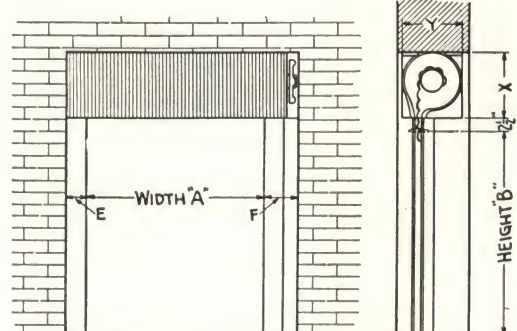
Mounted on face of wall with coil above bottom of lintel. Requiring very little alteration of the opening, it is particularly adapted to existing buildings. Manual push-up type. Spring counterbalanced. Curtain of interlocking slats. Operable from inside or outside. Provided with lock bar. Hood for coil furnished. Not recommended for sizes exceeding 80 sq. ft. in area.

Spring counterbalanced. Curtain of interlocking slats. Operable from either side. Provided with lock bar. Paneled hoods can be furnished at small additional cost.

Mounted in opening with brackets mounted on the jambs or in reveals provided in jambs. Used where sufficient headroom is not available. Manual push-up type, spring counterbalanced. Curtain of interlocking slats. Operable from either side. Provided with lock bar. Paneled hoods can be furnished at small additional cost.



*NOT RECOMMENDED FOR SIZES EXCEEDING 80 SQUARE FEET IN AREA.



*NOT RECOMMENDED FOR SIZES EXCEEDING 80 SQUARE FEET IN AREA.

F.M. 10. CLEARANCE DIMENSIONS, INCHES

Height B, Ft.		6			7			8			9			10			11			12		
		X	Y	E	X	Y	E	X	Y	E	X	Y	E	X	Y	E	X	Y	E	X	Y	E
Width A, Feet	3	13	12	6	14	13	6	14	13	6	17	16	6	17	16	6	17	16	6	18	17	6
	4	13	12	6	14	13	6	14	13	6	17	16	6	17	16	6	17	16	6	18	17	6
	5	13	12	6	14	13	6	14	13	6	17	16	6	17	16	6	17	16	6	18	17	6
	6	13	12	6	14	13	6	16	15	6	17	16	6	17	16	6	19	18	6	19	18	6
	7	13	12	6	14	13	6	16	15	6	17	16	6	19	18	6	19	18	6	19	18	6
	8	13	12	6	14	13	6	16	15	6	19	18	6	19	18	6	19	18	6	19	18	6
	9	13	12	6	16	15	6	18	17	6	19	18	6	19	18	6						
	10	13	12	6	16	15	6	18	17	6	19	18	6	19	18	6						
	11	13	12	6	16	15	6	18	17	6	19	18	6									
	12	13	12	7	16	15	7	18	17	7	19	18	7									

B.M. 10. CLEARANCE DIMENSIONS, INCHES

Height B, Feet		6				7				8				9				10				11				12			
		X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F				
Width A, Feet	3	14	11	3	4	15	13	3	4	15	13	3	4	17	15	3	4	18	16	3	4	18	16	3	4	18	16	3	4
	4	14	11	3	4	15	13	3	4	15	13	3	4	17	15	3	4	18	16	3	4	18	16	3	4	18	16	3	4
	5	14	11	3	4	15	13	3	4	15	13	3	4	17	15	3	4	18	16	3	4	18	16	3	4	20	18	3	4
	6	14	11	3	4	15	13	3	4	17	14	3	4	17	15	3	4	18	16	3	4	20	18	3	4	20	18	3	4
	7	14	11	3	4	15	13	3	4	17	14	3	4	17	15	3	4	19	17	3	4	20	18	3	4	20	18	3	4
	8	14	11	3	5	15	13	3	5	17	14	3	5	19	17	3	5	19	17	3	5	20	18	3	5	20	18	3	5
	9	14	11	3	5	17	14	3	5	18	16	3	5	19	17	3	5	19	17	3	5	20	18	3	5	20	18	3	5
	10	14	11	3	5	17	14	3	5	18	16	3	5	19	17	3	5	19	17	3	5	20	18	3	5	20	18	3	5
	11	14	11	3	5	17	14	3	5	18	16	3	5	19	17	3	5	19	17	3	5	20	18	3	5	20	18	3	5
	12	14	11	4	5	17	14	4	5	18	16	4	5	19	17	4	5	19	17	4	5	20	18	4	5	20	18	4	5

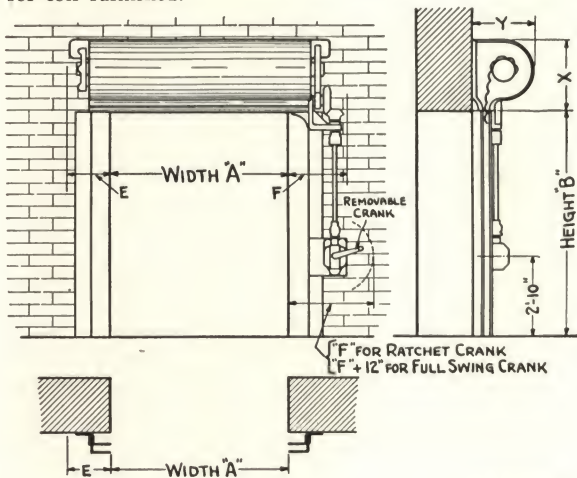
Note: For doors of intermediate sizes, use clearance dimensions listed for next larger width or height.



F.C. 20

CRANK SHAFT TYPE—FACE MOUNTING

Mounted on face of wall, with coil above bottom of lintel. Operable by hand crank, shafting and gear. Standard equipment provides for operation on door side of wall only. At small additional cost, door can be arranged to operate from both sides of wall or only from side of wall opposite door. Crank is detachable for preventing door from being operated. Sheet metal hood for coil furnished.



Locking of the F.C. 20 is accomplished by placing a padlock through one of the holes in the wheel placed above the crank box. A lug on the crank box casting engages with the lock and prevents the shaft being turned.

F.C. 20. CLEARANCE DIMENSIONS, INCHES

Height B, Ft.	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	X Y E F	X Y E F	X Y E F	X Y E F	X Y E F	X Y E F	X Y E F	X Y E F	X Y E F	X Y E F	X Y E F	X Y E F	X Y E F	X Y E F	X Y E F	X Y E F	X Y E F
6	12 11 6 11	13 12 6 11	13 12 6 11	14 12 6 11	15 14 6 11	16 14 6 11	16 14 6 11	16 15 6 11	16 15 6 11								
7	12 11 6 11	13 12 6 11	13 12 6 11	14 12 6 11	15 14 6 11	16 14 6 11	16 14 6 11	16 15 6 11	16 15 6 11								
8	12 11 6 11	13 12 6 11	13 12 6 11	14 13 6 11	15 14 6 11	16 14 6 11	16 14 6 11	16 15 6 11	16 15 6 11								
9	12 11 6 11	13 12 6 11	13 12 6 11	14 13 6 11	15 14 6 11	16 14 6 11	16 14 6 11	16 15 6 11	16 15 6 11								
10	12 11 6 11	13 12 6 11	13 12 6 11	14 13 6 11	15 14 6 11	16 14 6 11	16 14 6 11	16 15 6 11	16 15 6 11	17 16 6 11	21 19 6 11	21 20 6 11	21 20 6 11	21 20 6 11	24 22 8 11	24 22 8 11	26 24 8 11
11	12 11 6 11	13 12 6 11	13 12 6 11	14 13 6 11	15 14 6 11	16 14 6 11	16 14 6 11	16 15 6 11	16 15 6 11	17 16 6 11	21 19 6 11	21 20 6 11	21 20 6 11	21 20 6 11	24 22 8 11	24 22 8 11	26 24 8 11
12	13 12 7 12	13 12 7 12	13 12 7 12	14 13 7 12	15 14 7 12	16 14 7 12	16 14 7 12	16 15 7 12	16 15 7 12	17 16 7 12	21 19 6 11	21 20 6 11	21 20 6 11	21 20 6 11	24 22 8 11	24 22 8 11	26 24 8 11
13	14 12 7 12	14 13 7 12	14 13 7 12	15 14 7 12	16 15 7 12	16 15 7 12	16 15 7 12	16 15 7 12	16 15 7 12	17 16 7 12	21 19 6 11	21 20 6 11	21 20 6 11	21 20 6 11	24 22 8 11	24 22 8 11	26 24 8 11
14	16 14 6 11	16 14 6 11	16 14 6 11	17 16 6 11	17 16 6 11	19 18 6 11	19 18 6 11	19 18 6 11	19 18 6 11	21 19 6 11	21 19 6 11	21 20 6 11	21 20 6 11	21 20 6 11	24 22 8 11	24 22 8 11	26 24 8 11
15	16 14 7 12	16 14 7 12	16 14 7 12	17 16 7 12	17 16 7 12	19 18 7 12	19 18 7 12	19 18 7 12	19 18 7 12	21 19 6 11	21 19 6 11	21 20 6 11	21 20 6 11	21 20 6 11	24 22 8 11	24 22 8 11	26 24 8 11
16	16 14 7 12	16 14 7 12	16 14 7 12	17 16 7 12	17 16 7 12	19 18 7 12	19 18 7 12	19 18 7 12	19 18 7 12	21 19 6 11	21 19 6 11	21 20 6 11	21 20 6 11	21 20 6 11	24 22 8 11	24 22 8 11	26 24 8 11
17	16 15 7 12	16 16 7 12	16 16 7 12	17 17 7 12	17 17 7 12	19 18 7 12	19 18 7 12	19 18 7 12	19 18 7 12	21 19 6 11	21 19 6 11	21 20 6 11	21 20 6 11	21 20 6 11	24 22 8 11	24 22 8 11	26 24 8 11
18	16 15 7 12	16 16 7 12	16 16 7 12	17 17 7 12	17 17 7 12	19 18 7 12	19 18 7 12	19 18 7 12	19 18 7 12	21 19 6 11	21 19 6 11	21 20 6 11	21 20 6 11	21 20 6 11	24 22 8 11	24 22 8 11	26 24 8 11
19	16 15 7 12	16 16 7 12	16 16 7 12	17 17 7 12	17 17 7 12	19 18 7 12	19 18 7 12	19 18 7 12	19 18 7 12	21 19 6 11	21 19 6 11	21 20 6 11	21 20 6 11	21 20 6 11	24 22 8 11	24 22 8 11	26 24 8 11
20	16 15 7 12	16 16 7 12	16 16 7 12	17 17 7 12	17 17 7 12	19 18 7 12	19 18 7 12	19 18 7 12	19 18 7 12	21 19 6 11	21 19 6 11	21 20 6 11	21 20 6 11	21 20 6 11	24 22 8 11	24 22 8 11	26 24 8 11
21	16 15 7 12	16 16 7 12	16 16 7 12	17 17 7 12	17 17 7 12	19 18 7 12	19 18 7 12	19 18 7 12	19 18 7 12	21 19 6 11	21 19 6 11	21 20 6 11	21 20 6 11	21 20 6 11	24 22 8 11	24 22 8 11	26 24 8 11
22	16 15 7 12	16 16 7 12	16 16 7 12	17 17 7 12	17 17 7 12	19 18 7 12	19 18 7 12	19 18 7 12	19 18 7 12	21 19 6 11	21 19 6 11	21 20 6 11	21 20 6 11	21 20 6 11	24 22 8 11	24 22 8 11	26 24 8 11
23	16 15 8 14	17 16 8 14	17 16 8 14	18 17 8 14	18 17 8 14	20 19 8 14	20 19 8 14	20 19 8 14	20 19 8 14	22 21 8 14	22 21 8 14	22 21 8 14	22 21 8 14	22 21 8 14	25 24 8 14	25 24 8 14	27 25 10 16
24	16 15 8 14	17 16 8 14	17 16 8 14	18 17 8 14	18 17 8 14	20 19 8 14	20 19 8 14	20 19 8 14	20 19 8 14	22 21 8 14	22 21 8 14	22 21 8 14	22 21 8 14	22 21 8 14	25 24 8 14	25 24 8 14	27 25 10 16

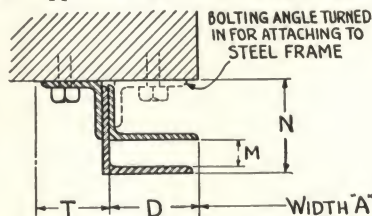
Note: For doors of intermediate sizes, use clearance dimensions listed for next larger width or height. Slat No. 2 used on doors of sizes listed above heavy line. Slat No. 4 used on doors of sizes listed below heavy line.

SLATS

No. 2 Slat—Used on average size door. Rolled from 22, 20, 18, and 16 U. S. gauge open hearth copper-bearing steel, hot galvanized. $\frac{3}{8}$ in. depth of crown.

No. 4 and No. 10 Slat—Used on extremely wide doors. Rolled from 20, 18, and 16 U. S. gauge. $\frac{7}{8}$ in. depth of crown.

Note: Schedule below gives guide clearances required and slat required for doors of various widths.

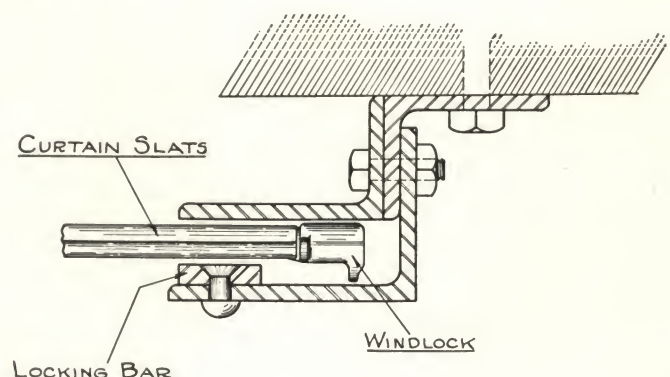


SCHEDULE OF CLEARANCES FOR TYPICAL CURTAIN GUIDE

	Width-A, ft.	D, in.	M, in.	N, in.	T, in.
Slat No. 2	to 7 incl.	2	$\frac{7}{8}$	$3\frac{1}{2}$	$2\frac{1}{2}$
	over 7 to 11 incl.	$2\frac{1}{2}$	$\frac{7}{8}$	$3\frac{1}{2}$	$2\frac{1}{2}$
	over 11 to 14 incl.	3	$\frac{7}{8}$	$3\frac{1}{2}$	$2\frac{1}{2}$
Slat Nos. 4 and 10	to 14 incl.	$2\frac{1}{2}$	$1\frac{1}{8}$	5	$2\frac{1}{2}$
	over 14 to 17 incl.	3	$1\frac{1}{8}$	5	$2\frac{1}{2}$
	over 17 to 22 incl.	$3\frac{1}{2}$	$1\frac{1}{8}$	5	$2\frac{1}{2}$
	over 22 to 24 incl.	4	$1\frac{1}{8}$	5	3
	over 24 to 32 incl.	6	$1\frac{1}{8}$	6	4
	over 32 to 40 incl.	8	$1\frac{1}{8}$	6	4

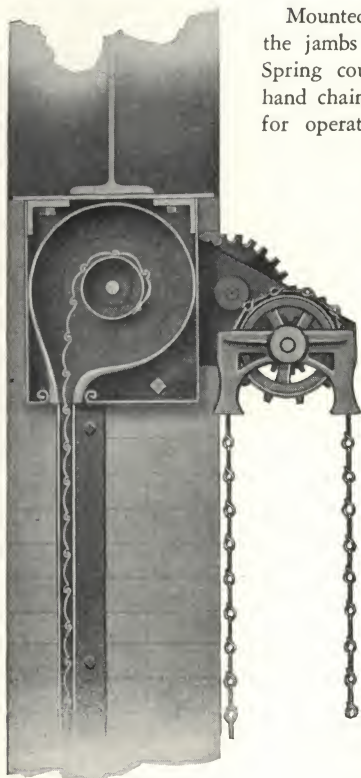
WINDLOCKS

Illustration shows how endlocks are designed with lug, which engages with a locking bar attached to the guide. This prevents curtain from leaving guide because of deflection from tremendous wind pressure or other forces. Provided wherever door is to be subject to extreme wind pressure. Otherwise type of endlock shown on page 7 is used.

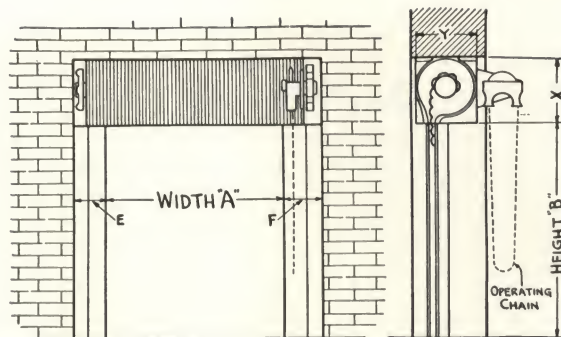


B.H. 20

CHAIN HOIST TYPE—UNDER LINTEL MOUNTING



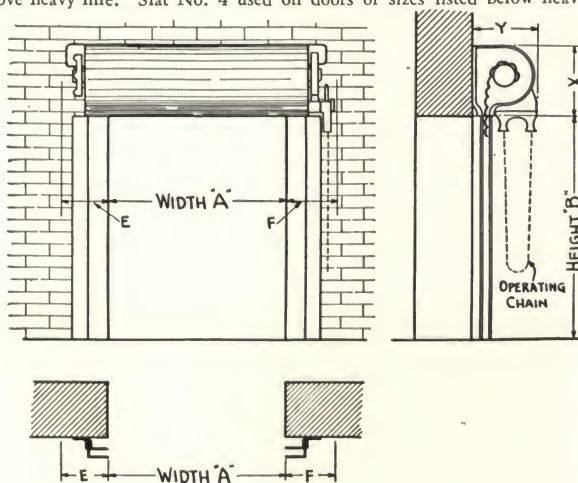
Mounted in opening with brackets mounted on the jambs or in reveals provided in the jambs. Spring counterbalanced. Operated by means of hand chain, sprocket and gear. Can be arranged for operation from either side of wall. Curtain of interchangeable, interlocking slats. Keeper for locking chain to jamb is furnished.



B.H. 20. CLEARANCE DIMENSIONS, INCHES

Height B, ft.		TABLE 23. CLEARANCE DIMENSIONS, FEET																																	
		8				9				10				11				12				13				14				15				16	
		X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F						
Width A, Ft.	6	13	10	4	5	14	11	4	5	14	11	4	5	14	12	4	5	16	13	4	5	17	14	4	5	17	14	4	5	17	15	4	5		
	7	13	10	4	5	14	11	4	5	14	11	4	5	14	12	4	5	16	13	4	5	17	14	4	5	17	14	4	5	17	15	4	5		
	8	13	10	5	6	14	11	5	6	14	11	5	6	16	12	5	6	16	13	5	6	17	14	5	6	17	14	5	6	17	15	5	6		
	9	13	10	5	6	14	11	5	6	14	11	5	6	16	12	5	6	16	13	5	6	17	14	5	6	17	14	5	6	17	15	5	6		
	10	13	10	5	6	14	11	5	6	14	11	5	6	16	12	5	6	16	13	5	6	17	14	5	6	17	14	5	6	17	15	5	6		
	11	13	10	5	6	14	11	5	6	14	11	5	6	16	12	5	6	16	13	5	6	17	14	5	6	17	14	5	6	17	15	5	6		
	12	13	10	5	6	14	11	5	6	14	11	5	6	16	12	5	6	16	13	5	6	17	14	5	6	17	14	5	6	17	15	5	6		
	13	14	12	5	6	16	12	5	6	16	12	5	6	16	13	5	6	17	14	5	6	17	14	5	6	17	14	5	6	18	15	5	6		
	14	16	13	5	6	16	14	5	6	18	15	5	7	19	16	5	7	19	16	5	7	19	17	5	7	19	17	5	7	20	18	5	7		
	15	16	14	5	6	17	14	5	6	18	15	6	8	19	16	6	8	19	16	6	8	19	17	6	8	19	17	6	8	20	18	6	8		
	16	16	14	5	6	17	14	5	6	18	15	6	8	19	16	6	8	19	16	6	8	19	17	6	8	19	17	6	8	20	18	6	8		
	17	17	14	6	8	18	15	6	8	18	15	6	8	19	16	6	8	19	16	6	8	19	17	6	8	22	19	6	8	22	19	6	8		
	18	17	14	6	8	18	15	6	8	18	15	6	8	19	16	6	8	19	16	6	8	19	17	6	8	22	19	6	8	22	19	6	8		
	19	17	14	6	8	18	15	6	8	18	15	6	8	19	16	6	8	22	19	6	8	22	19	6	8										
	20	17	14	6	8	18	15	6	8	18	15	6	8	19	16	6	8	22	19	6	8	22	19	6	8										
	21	17	15	6	8	18	15	6	8	20	18	6	8	22	19	6	8	22	19	6	8	22	19	6	8	23	20	6	8						
22	17	15	6	8	18	15	6	8	18	15	6	8	20	18	6	8	22	19	6	8	22	19	6	8	23	20	6	8							
23	17	15	7	9	18	15	7	9	18	15	7	9	20	18	7	9	22	19	7	9	22	19	7	9	23	20	7	9							

Note: For doors of intermediate sizes, use clearance dimensions listed for next larger width or height.
Slat No. 2 used on doors of sizes listed above heavy line. Slat No. 4 used on doors of sizes listed below heavy line.



F.H. 20

CHAIN HOIST TYPE—FACE MOUNTING

Illustration of F.H. 20 shown on page 7. Mounted on face of wall with coil above bottom of lintel. Operated by hand chain, sprocket and gear. Spring counterbalanced. Arranged for operation from door side of wall only. Where operation from opposite wall is desired, call for F.H. 61, on which gearing is on shaft which extends through the wall. Curtain of interchangeable interlocking slats. Sheet metal hood for coil furnished. Provision for locking chain to jamb.

F.H. 20. CLEARANCE DIMENSIONS, INCHES

Height B, Ft.																																																			
	8			9			10			11			12			13			14			15			16			17			18			19			20			21			22			23			24		
	X	Y	E	X	Y	E	X	Y	E	X	Y	E	X	Y	E	X	Y	E	X	Y	E	X	Y	E	X	Y	E	X	Y	E	X	Y	E	X	Y	E	X	Y	E	X	Y	E									
Width A, Ft.	6	12	13	6	7	13	13	6	7	14	13	6	7	15	15	6	7	16	17	6	7	16	17	6	7	16	17	6	7	16	17	6	7	16	17	6	7	16	17	6	7	16	17	6	7						
	7	13	13	6	7	13	13	6	7	14	13	6	7	15	15	6	7	16	17	6	7	16	17	6	7	16	17	6	7	16	17	6	7	16	17	6	7	16	17	6	7	16	17	6	7						
	8	12	13	6	7	13	13	6	7	13	14	6	7	14	14	6	7	15	16	7	16	17	6	7	16	17	6	7	16	17	6	7	16	17	6	7	16	17	6	7	16	17	6	7							
	9	12	13	6	7	13	13	6	7	13	14	6	7	14	14	6	7	15	16	7	16	17	6	7	16	17	6	7	16	17	6	7	16	17	6	7	16	17	6	7	16	17	6	7							
	10	12	13	6	7	13	13	6	7	13	14	6	7	14	15	6	7	15	16	7	16	17	6	7	16	17	6	7	16	17	6	7	16	17	6	7	16	17	6	7	16	17	6	7							
	11	12	13	6	7	13	13	6	7	13	14	6	7	14	16	6	7	15	17	6	7	16	17	6	7	16	17	6	7	16	17	6	7	16	17	6	7	16	17	6	7	16	17	6	7						
	12	13	14	7	8	13	14	7	8	14	16	7	8	15	17	7	8	16	17	7	8	16	17	7	8	16	17	7	8	16	17	7	8	16	17	7	8	16	17	7	8	16	17	7	8						
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	14	15	17	7	8	16	18	7	8	16	18	7	8	17	19	7	8	18	19	7	8	18	19	7	8	18	19	7	8	18	19	7	8	18	19	7	8	18	19	7	8	18	19	7	8						
	15	16	17	7	8	16	18	7	8	16	18	7	8	17	19	7	8	18	19	7	8	18	19	7	8	18	19	7	8	18	19	7	8	18	19	7	8	18	19	7	8	18	19	7	8						
	16	17	17	7	8	16	18	7	8	16	18	7	8	17	19	7	8	18	19	7	8	18	19	7	8	18	19	7	8	18	19	7	8	18	19	7	8	18	19	7	8	18	19	7	8						
	17	16	17	7	8	16	18	7	8	16	18	7	8	17	19	7	8	18	19	7	8	18	19	7	8	18	19	7	8	18	19	7	8	18	19	7	8	18	19	7	8	18	19	7	8						
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	19	16	15	7	8	16	17	7	8	16	17	7	8	17	18	7	8	18	19	7	8	18	19	7	8	18	19	7	8	18	19	7	8	18	19	7	8	18	19	7	8	18	19	7	8						
	20	16	15	7	8	16	17	7	8	16	17	7	8	17	18	7	8	18	19	7	8	18	19	7	8	18	19	7	8	18	19	7	8	18	19	7	8	18	19	7	8	18	19	7	8						
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	24	16	15	8	9	17	18	8	9	17	18	8	9	18	19	8	9	19	20	8	9	19	20	8	9	19	20	8	9	19	20	8	9	19	20	8	9	19	20	8	9	19	20	8	9						

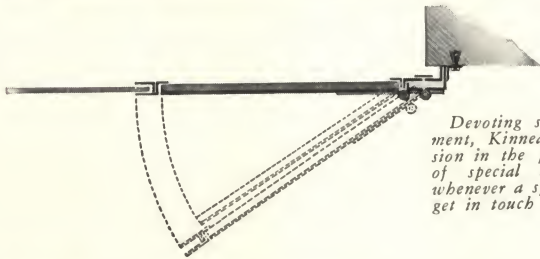
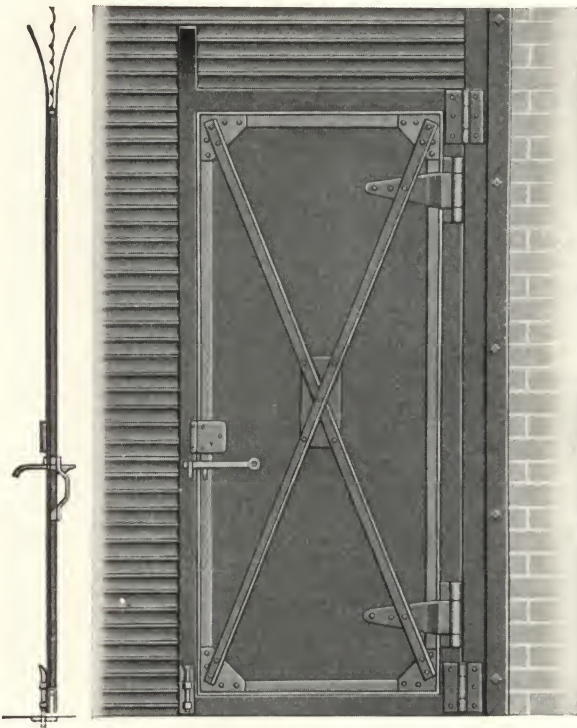
Note: For doors of intermediate sizes use clearance dimensions listed for next larger width or height.
Slat No. 2 used on doors of sizes listed above heavy line. Slat No. 4 used on doors of sizes listed below heavy line.



AUXILIARY EQUIPMENT

WICKET OR PASS DOOR The wicket or pass door provides an entrance without raising the major door. It is an ideal arrangement where there is no access to the building other than by the main opening. The wicket is built of an angle frame covered with a steel plate and equipped with heavy strap hinges and massive latch and lock. It is hung on a frame hinged to the side guide. The frame is constructed of angles forming grooves in which the rolling door travels. When the rolling door is raised, the wicket door and frame are swung back against the wall.

INTERMEDIATE MOVABLE POST Very wide openings can frequently be more conveniently closed by a number of doors than by a single large one, using between the doors movable posts with the edges constructed to form double grooves. Hinged to the bracket, these posts are swung up out of the way when the doors are open. Ordinarily the posts swing perpendicularly to the plane of the curtain, but can be arranged to swing obliquely; slide to the side of the opening by a trolley on a horizontal overhead track; or other methods suited to the individual needs. Details on special arrangements will be submitted upon request.



Devoting sole attention to door equipment, Kinnear Engineers have had occasion in the past to design a multiplicity of special auxiliary units. Therefore, whenever a special application is required, get in touch with Kinnear

A wicket door on a Kinnear Steel Rolling Door 11 ft. x 16 ft. 6 in. in size. One of several large doors installed for the Ohio Valley Electric Railway Company, Huntington, West Virginia. Saves time and labor of opening the main door



Showing how Pier 32, San Francisco Harbor has large openings closed with two moderate sized Steel Rolling Doors and movable Post. Posts slide on tracks to the side of the opening out of the way, when both doors are in use.



K

"AKBAR" FIRE DOORS

The Positive, Automatic Closing Fire Guard

Kinnear Fire Doors and Shutters are designed distinctly for fire protection purposes for openings that require Underwriters' labeled equipment and where insurance rates are a consideration. However, they are designed so they may also be used for service purposes with the same resulting economies of the service door.

Those who have made a thorough study of fire prevention realize that nothing is more inducive to the rapid spread of fire than drafts which carry the flame through passage ways and window openings. As Kinnear Fire Doors offer an automatic closure for such openings, it is unanimously agreed that they are an exceedingly practical protective device . . . an inexpensive form of insurance against the numerous losses caused by a serious fire. Their effectiveness as a fire guard has been proved in major conflagrations throughout the country . . . Kinnear equipped buildings being the only ones standing in an otherwise completely demolished area. It is false economy to neglect protection and insurance such as offered by Kinnear Fire Doors and Shutters.

WHY IT HAS NO EQUAL

In general appearance and principle of operation, the Kinnear Akbar Fire Door is similar to the Steel Rolling Service Door. But, in addition, they are provided with mechanism for positive, automatic closure in case of fire, as well as embodying numerous other construction features which make them a foremost fire protective device. The careful purchaser will find a study of the following points and the illustration on the opposite page, descriptive of an Akbar Manual Automatic Door for interior service (Class A, B and C), of exceptional interest.

1. Brackets—High test gray iron, cast in special mold, providing a high factor of safety and a smooth painting surface. Integral cast bracket mouth and stops give smooth operation, eliminating excessive drag of curtain on stops.

2. Hoods—Neatly formed from hot galvanized sheet metal of No. 24 U. S. gauge, fitted to give tight enclosure to coil. Reinforcing beads and flanges prevent deflection.

3. Curtain—Composed of interlocking slats of hot galvanized copper-bearing steel and not less than No. 20 U. S. gauge, rolled in especially constructed machines. Slat ends are designed to have a high crown to provide rigidity. Hinging centers so arranged to give free action in the curtain and to properly nest when coiled on the barrel.

4. Spring Barrel—To encase counterbalance mechanism. Made from heavy steel tubing or pipe of thickness and diameter particularly designed to carry the curtain load and minimize deflection, thereby preventing binding in barrel bearings. Main bearings in supporting barrel are roller bearings.

5. Counterbalance—Composed of helical springs wound from especially heat-treated steel and tempered with oil. Counterbalances individually tailored and tested on each job.

6. Rings—Rings of malleable iron of special involute shape, designed to coil the curtain with a uniformly increasing diameter. Size adaptable to provide an initial diameter sufficient to insure uniform and constant counterbalance for all points of the door travel.

7. Shafting or Tension Rod—Of sufficient size to carry the torsional load of the spring counterbalance and of cold rolled polished steel, in order to eliminate friction in all bearings.

8 & 9. Barrel Locks—The weight of the curtain is balanced by springs, but when the curtain is down in the closed position, it is also supported by the barrel lock, in order to eliminate the danger of the curtain collapsing in case the temper of the spring is lost from the excessive heat of a fire.

10 & 11. Auxiliary Retaining Wheels—These wheels are attached to the tension shaft (16) of the auxiliary spring (15). This spring (15) can, there-

fore, function only when the wheels (10 & 11) are free to turn after being released for automatic closure.

12. Safety Governor—This governor retains the wheels (10 & 11) and is itself held in place by the release levers (13 & 14). When these levers release the governor, it permits the wheels to revolve only at a safe speed. Therefore, the force of the auxiliary spring (15) is controlled by this governor and the curtain is forced down at a safe speed, thus eliminating any danger of personal injury to persons accidentally in the opening. The curtain closes on the floor in automatic closure, without the impact so common with the gravity closing type.

13 & 14. Release Levers—The automatic closing mechanism is retained by these levers. All contact points are either covered or made from non-corrodible metals, in order to eliminate any possible freezing together. The lever (14) is held up by fusible links (25) which release at a temperature of 160 degrees F.

15 & 16. Auxiliary Spring and Tension Rod—This spring is anchored to the tension rod, which is in turn held in place by the auxiliary wheels (10 & 11). It always carries stored-up energy sufficient for completely and positively closing the door from any position in the opening when automatically released. It has no function for normal operation and is independent of the counterbalance spring. The counterbalance spring is, therefore, unmolested when door is automatically closed.

17. Barrel Plugs—These close the ends of the barrel, carry the springs, and are of heavy cast iron, especially designed for holding the ends of the spring and eliminating the usual excessive strain at the spring ends.

18. Adjusting Wheel—This is connected to the tension rod (7), carrying the counterbalance spring and attached to the bracket opposite to the one carrying the automatic mechanism. The tension of the counterbalance spring is controlled by this wheel and the operating balance of the door can be adjusted by this wheel. As it is separated from the automatic release, it is again to be noted that the functioning of the automatic closing device does not affect the counterbalance.

19. Drop Hood or Baffle—A metal shield of the same gauge as the hood is attached to the main hood by a continuous beaded joint, permitting the shield to hinge over the curtain coil. This shield forms the drop hood and is held up out of the way by a fusible link attachment (20). In case of fire, the link melts and the drop hood drops on the coil and becomes a baffle against the passage of smoke and hot gases around through the bracket.

20. Hood Fusible Links—These links hold the drop hood or baffle out of the way during normal operation and are so distributed to provide necessary alignment of the hood. A temperature of 160 degrees F. releases the links and permits the baffle to close on the curtain coil.

21. Guides—Fabricated from structural steel of at least $\frac{3}{8}$ in. thickness. Slotted holes are provided for the rivets holding angles or plates together and for the bolts securing guide to the wall. Heat destructible washers are placed underneath the heads of the rivets and bolts, this providing means for expansion and eliminating the danger of buckling guides in case of fire. The depth of the grooves is increased to accommodate the increase in width of openings.

22. Clearance—Sufficient clearance is provided between ends of curtain and back of guides and between all other operating parts, to accommodate an expansion for temperatures up to and including 1800 degrees F.

23. End Locks—These are placed on every slat and are made of malleable iron, shaped to close the concave ends of the slats and to prevent the passage of hot gases and smoke around the edge of the curtain. These end locks retain the slats in place, maintain alignment and protect the slats against abrasion in the guides.

24. Bottom Bar—Designed to re-enforce the bottom of the curtain and made of two angles and a flat plate. These parts are held together with rivets or bolts in slotted holes and are provided with heat-destructible washers for tak-

Kinnear Steel Rolling Fire Doors on headgates leading to penstocks in Power House No. 2 of the Niagara Falls Power Company. Another example of the numerous applications for which Kinnear Doors are suited

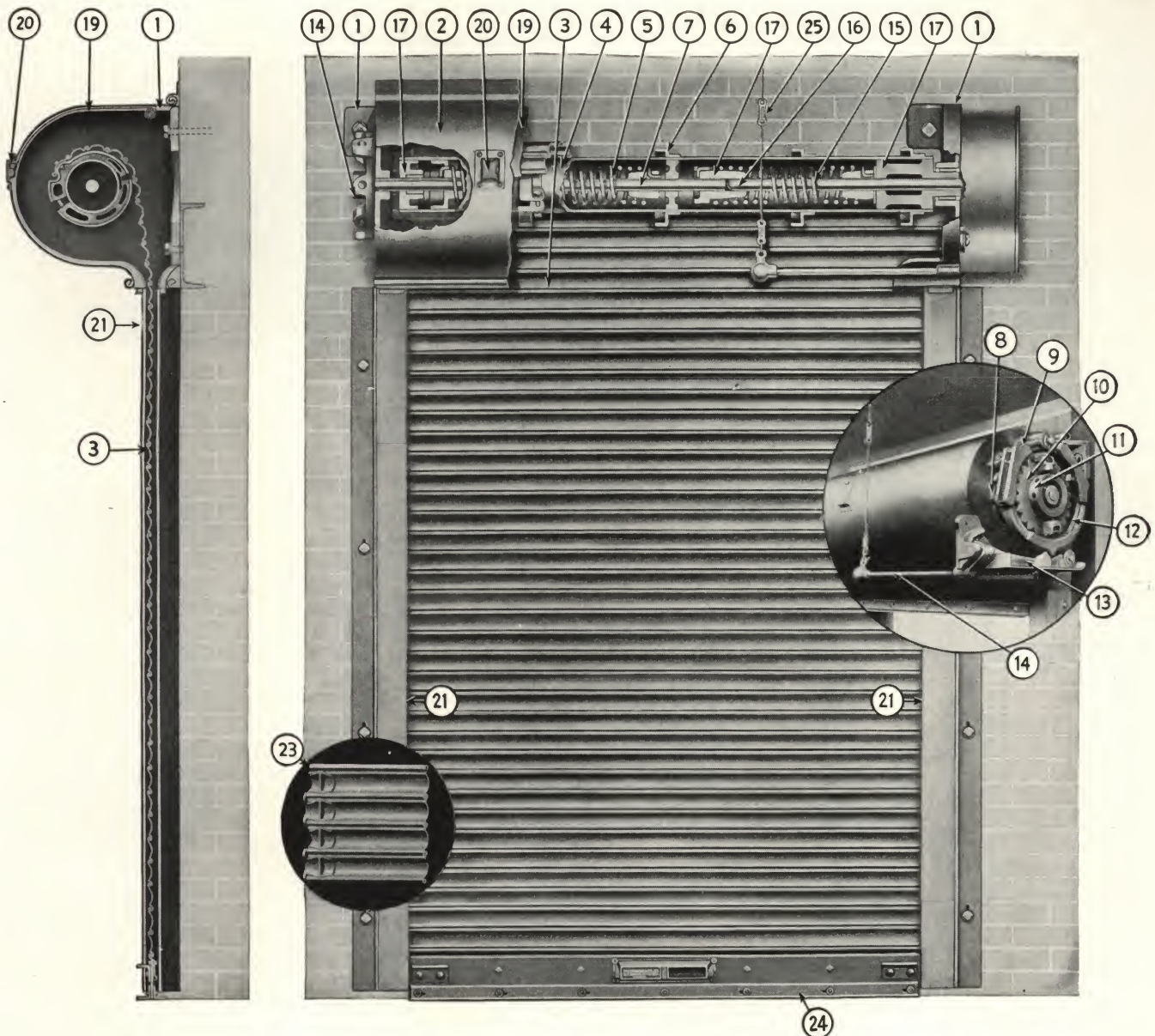
Protection afforded the Bessemer Building, Springfield, Ill., by the use of Kinnear Steel Rolling Fire Shutters on all windows on the fire exposure side, is self-evident. All the shutters automatically closed when the fire started



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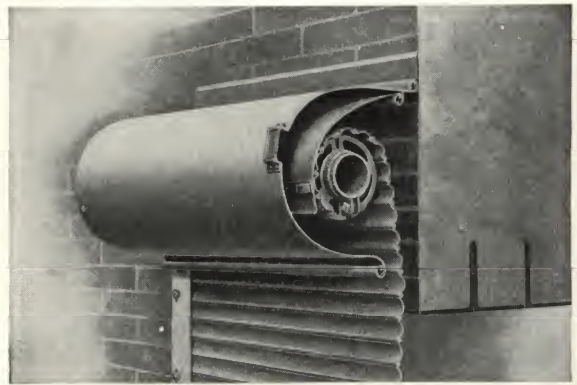
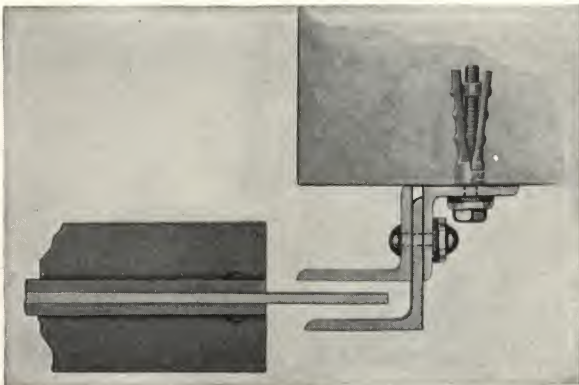
DESIGNED and BUILT to MEET

INDIVIDUAL REQUIREMENTS



22—Two of the many provisions made in Akbar construction to accommodate expansion for temperatures of high degree are: Ample clearance between ends of curtain and back of guide and bolts and rivets in slotted holes with steel and fusible washers.

Showing how the auxiliary hood on Akbar Door drops over the curtain coil when the fusible link melts under excessive heat exposure. This shield becomes a baffle against the passage of smoke and hot gases over top of curtain.



K

ing care of expansion in case of fire. The bar is provided with handles for raising the door and with stops for retaining it, when open, in an exact position against the coil bracket and free for a direct start in closing automatically in case of fire. Slide bolt locks, as used on steel rolling service doors, can be furnished on these bottom bars when specified.

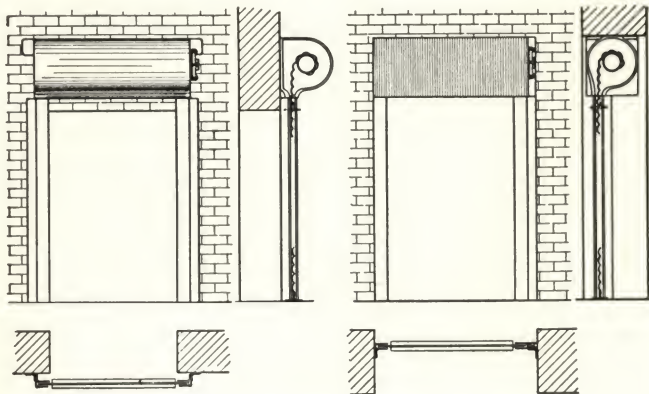
Note: The bottom bar carries both the Underwriters' label and Kinnear's name plate which bears the number that will identify the door in case any repair parts are ever required. THE KINNEAR MANUFACTURING CO., maintains complete order, detail and pattern files which provide information that enables them to duplicate any part ever furnished on a door of their manufacture.

UNDERWRITERS' LABELS

Kinnear Fire Doors and Shutters are inspected by the Underwriters' Laboratories, Inc., and when built within size limits, listed below, bear the required label. While the Underwriters' label is the assurance of an acceptable and rated fire guard, it is not an indication of maximum quality, as set forth in the following quotation taken from their code book: "Products of the manufacturers labeled and listed as mentioned herein are not necessarily equivalent in quality or merit; the labeling and listing indicating only compliance with Underwriters' standards." In making comparisons, this point should be considered, as Kinnear Doors embody refinements that are unique and which increase their value and utility.

METHODS OF OPERATION

While provided with mechanism for automatic closure, Kinnear Fire Doors may be arranged for various methods of operation, when also being used for service purposes. They are namely: manual push-up, chain hoist, crank hoist and electrically. Illustrations at the right and the one on page 13 show how the automatic closing mechanism is incorporated in the case of the first three types.



INSTALLATION

As illustrated above Kinnear Fire Doors can be mounted on the face of the wall with brackets and coil entirely above the bottom of the lintel; or in the opening, in which case the brackets and coil are located on the jambs or in reveals provided in the jambs.

Where an opening requires a door on both sides of the wall and it is desirable to mount the mechanism between the jambs, the coils are placed



either opposite each other or one above the other, depending upon the thickness of the wall.

If Kinnear Engineers are given the opportunity to work with the Architect and Contractor during the designing of the building, it is frequently possible to completely conceal all working parts of the door, and through the use of marble, bronze or other materials, make a very attractive installation.

TYPES OF LABELS

The drawing below illustrates the four classifications under which Kinnear Doors are labeled. The size limitations established by the Underwriters; for each classification are as follows:

Class A—Openings in fire walls not exceeding 80 sq. ft.; the width and height not to exceed 12 ft.

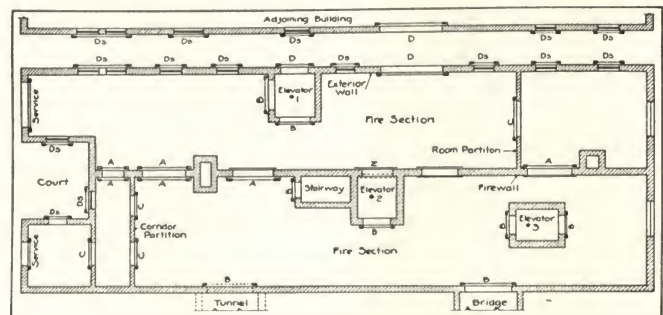
Class B—Openings in vertical shafts, such as elevator shafts, the size limits being the same as in Class A.

Class C—Openings in corridors and room partitions, the size limits being the same as in Class A.

Class D—Openings in exterior walls not exceeding 100 sq. ft.; where width and height does not exceed 12 ft.

As Kinnear Fire Doors of large size are built according to the same standards the Underwriters will inspect and issue an oversize label on construction (with exception) for doors not exceeding 24 ft. in width or height.

As requirements vary in different localities, the local Inspection Bureau should be consulted. Kinnear Engineers will also gladly submit detailed recommendations upon request.



Closing a fire wall opening in a passage way with a Kinnear Akbar Door. Note how all mechanism is concealed. Though the door is normally kept in the open position, the curtain gives a clean-cut appearance when closed.

Three oversize Class A Kinnear Steel Rolling Fire Doors installed on a fire wall in the Fashion Department Store, Columbus, Ohio. Installed at the time the store expanded its operations into the adjoining building. Size 17 ft. 11 in. x 10 ft. 1 7/8 in.



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"SUPERIOR" Fire Window Shutters

Automatic and Designed for Periodic Testing

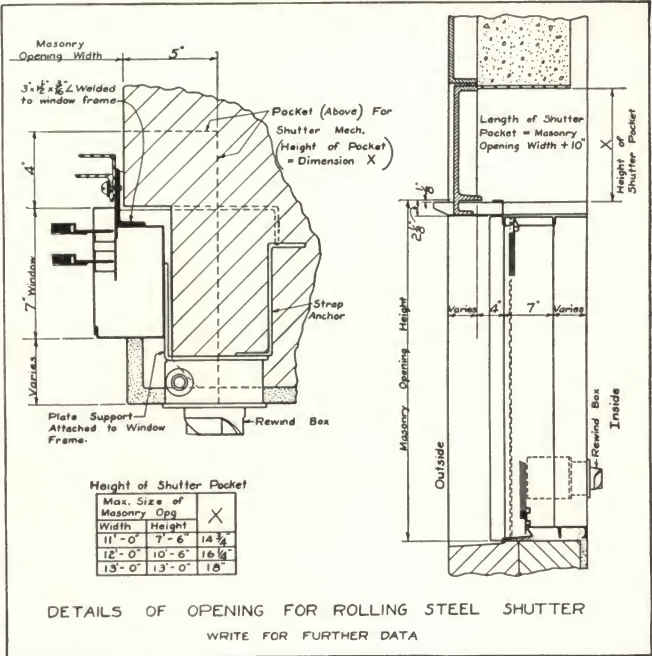
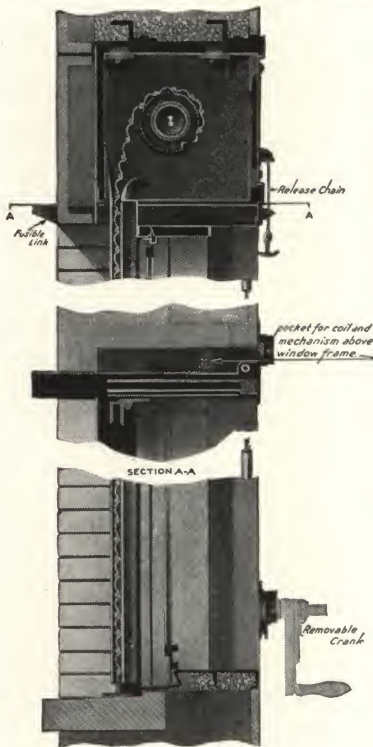
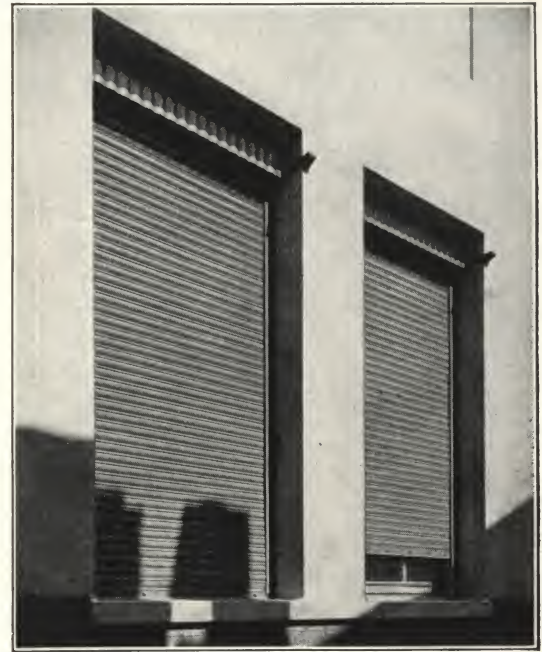
Superior Fire Shutters are substantially the same in design as the Kinnear Akbar Fire Doors, except they are not constructed for service raising and closing. They are provided with the safety governor regulating the closing speed so as to eliminate all personal danger hazards and destructive impacts on the window sill. Provision is made for periodic testing. By the tripping of a release chain accessible from the inside wall, the shutter is closed the same as if it were automatically closed in case of fire. It can then be raised to the open position by a gearless rewind mechanism and a hand crank easily accessible from the floor. Crank to be removed when not in use.

To insure positive starting, a powerful push-down spring gives the curtain a hammer starting blow of approximately 200 inch-pounds simultaneously with fusing of the releasing link.

Superior Fire Shutters are constructed to the standards of the Underwriters and labeled for exterior window openings not exceeding 100 sq. ft. in area; or more than 12 ft. in width or height. True to its name, this is a superior device embodying the same skilled workmanship and high quality materials as found in other Kinnear Equipment.

As can be seen from the illustrations the Superior Fire Shutter can be almost completely concealed, particularly when they are installed at the time the building is constructed. For application on old buildings the coil and brackets are mounted on the outside face of the window.

Note: Superior Fire Shutters are ideal also for dark rooms, such as x-ray rooms in hospitals, etc. Many of them are at this time being used for that purpose. Special recommendations will be submitted upon request.



The Superior Fire Shutters installed in the Cincinnati Suburban Telephone Building, Cincinnati, Ohio, are equivalent to a man standing ready at all times to close the window openings in the event of fire

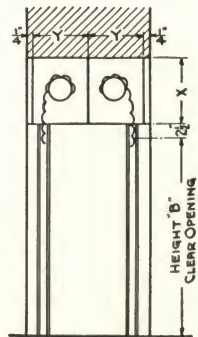
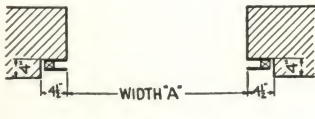
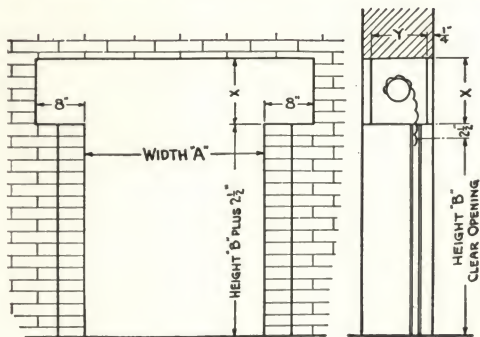
Detroit Exchange of The Michigan Telephone and Telegraph Company which is fully equipped with the concealed type of Kinnear Automatic Steel Rolling Fire Shutters



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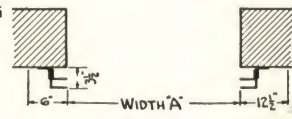
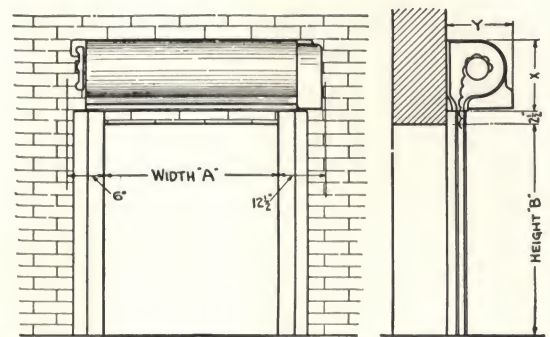
UNDERWRITERS' LABELED—AKBAR FIRE DOORS—AUTOMATIC CLOSING

HAND LIFT TYPE, UNDER LINTEL MOUNTING



* NOT RECOMMENDED
FOR SIZES EXCEEDING
80 SQUARE FEET IN
AREA.

HAND LIFT TYPE, FACE MOUNTING



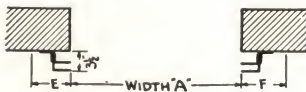
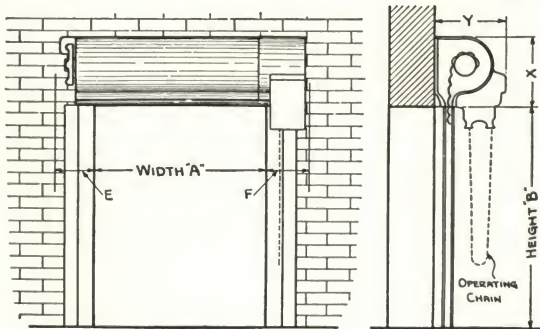
CLEARANCE DIMENSIONS, INCHES

Width A, Feet	Height B, Ft.	6		7		8		9		10		11		12	
		X	Y	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y
		17	13	17	13	17	13	17	14	18	15	18	15	20	17
3	3	17	13	17	13	17	13	17	14	18	15	18	15	20	17
4	4	17	13	17	13	17	13	17	14	18	15	18	15	20	17
5	5	17	13	17	13	17	13	17	14	18	15	18	15	20	17
6	6	17	13	17	13	17	13	17	14	18	15	18	15	20	17
7	7	17	13	17	13	17	13	17	14	18	15	18	15	20	17
8	8	17	13	17	13	17	13	17	14	18	15	18	15	20	17
9	9	17	13	17	13	17	13	17	14	18	15	18	15	20	17
10	10	17	13	17	13	17	13	17	14	18	15	18	15	20	17

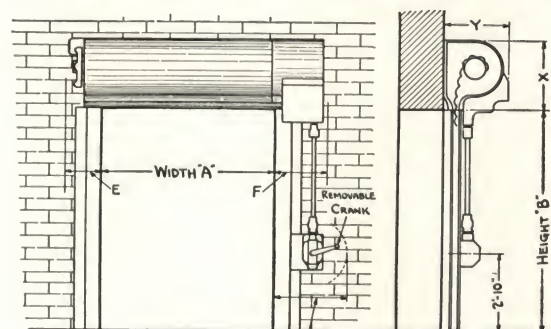
CLEARANCE DIMENSIONS, INCHES

Width A, Feet	Height B, Ft.	6		7		8		9		10		11		12	
		X	Y	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y
		15	16	15	16	15	16	17	18	17	18	18	18	18	18
3	3	15	16	15	16	15	16	17	18	17	18	18	18	18	18
4	4	15	16	15	16	15	16	17	18	17	18	18	18	18	18
5	5	15	16	15	16	15	16	17	18	17	18	18	18	18	18
6	6	15	16	15	16	15	16	17	18	17	18	18	18	18	18
7	7	15	16	15	16	15	16	17	18	17	18	18	18	18	18
8	8	15	16	15	16	15	16	17	18	17	18	18	18	18	18
9	9	15	16	15	16	15	16	17	18	17	18	18	18	18	18
10	10	15	16	15	16	15	16	17	18	17	18	18	18	18	18

CHAIN HOIST TYPE, FACE MOUNTING



CRANK SHAFT TYPE, FACE MOUNTING



CLEARANCE DIMENSIONS, INCHES

Width A, Feet	Hgt. B, Ft.	6		7		8		9		10		11		12	
		X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y
		17	20	9	17	20	9	17	20	9	17	20	9	17	20
5	5	17	20	9	17	20	9	17	20	9	17	20	9	17	20
6	6	17	20	9	17	20	9	17	20	9	17	20	9	17	20
7	7	17	20	9	17	20	9	17	20	9	17	20	9	17	20
8	8	17	20	9	17	20	9	17	20	9	17	20	9	17	20
9	9	17	20	9	17	20	9	17	20	9	17	20	9	17	20
10	10	17	20	9	17	20	9	17	20	9	17	20	9	17	20
11	11	17	20	9	17	20	9	17	20	9	17	20	9	17	20
12	12	17	20	9	17	20	9	17	20	9	17	20	9	17	20

CLEARANCE DIMENSIONS, INCHES

Width A, Feet	Hgt. B, Ft.	6		7		8		9		10		11		12	
		X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y
		17	17	9	12	17	17	9	12	17	17	9	12	17	17
5	5	17	17	9	12	17	17	9	12	17	17	9	12	17	17
6	6	17	17	9	12	17	17	9	12	17	17	9	12	17	17
7	7	17	17	9	12	17	17	9	12	17	17	9	12	17	17
8	8	17	17	9	12	17	17	9	12	17	17	9	12	17	17
9	9	17	17	9	12	17	17	9	12	17	17	9	12	17	17
10	10	17	17	9	12	17	17	9	12	17	17	9	12	17	17
11	11	17	17	9	12	17	17	9	12	17	17	9	12	17	17
12	12	17	17	9	12	17	17	9	12	17	17	9	12	17	17

Note: For doors of intermediate sizes, use clearance dimensions listed for next larger width or height.
Slat No. 2 used on all door sizes listed on this page.



POWER UNITS

In keeping with today's demand for greater speed and convenience, Kinnear Motor Operated Doors are rapidly becoming one of the most popular Kinnear installations. For rolling doors are especially adapted to electric operation and the Kinnear Power Unit provides a rugged, compact and dependable operator which is available for any size new or old door. With control stations placed at any convenient point, the door can be remotely controlled with a press of a button . . . magically opening and closing it with speed, smoothness and dependency. The saving in time alone, which Kinnear Motor Doors effect, quickly pays for their moderate cost.

METHOD OF OPERATION

The door is driven by electric motor through reduction gearing, the operation being accomplished as follows:

By momentary contact of the "Open" or "Close" button on the operating switch, the pilot circuit magnetically closes the main line reversing switch and starts the motor. The limit switch will, at the termination of the door travel, open the pilot circuit, thereby breaking the main circuit and simultaneously the magnetic brake will close, stopping the motor. The door can be stopped at any intermediate position by pushing the stop button, from which position it can either be opened or closed.

EMERGENCY OPERATION

A distinctive feature that has created a general preference for the Kinnear Power Unit is the provision for emergency manual operation by hand chain in the event of interrupted power service. This is accomplished by pulling down on a hand chain which instantly engages emergency operator, releases the motor brake and opens the motor control circuit which prevents the motor being inadvertently started until the emergency operator is detached.

After the emergency operator is engaged as above described, the door is operable by hand chain. When not in use the emergency operating and control chains are held out of the way by a keeper on the wall.

GENERAL SPECIFICATIONS

Each Kinnear Power Unit comprises the following: Power unit supports, motor reduction gears, magnetic brake, limit switch, emergency manual operation with interlocking limit switch, reversing panel and single station push button control. Motor is of series wound type for direct current and of high starting torque, elevator type, for alternating current. Available for 110-220-440-550 volts . . . AC—1, 2, or 3 phase—DC.

Push button control is three button type, labeled "Open," "Close" and "Stop."

Magnetic reversing panel for remote control is fully enclosed and mechanically interlocked.

WIRING

The wire, conduit and fuses are not furnished or installed by THE KINNEAR MANUFACTURING Co., but are to be provided by others in accordance with wiring diagrams supplied by Kinnear.

GENERAL

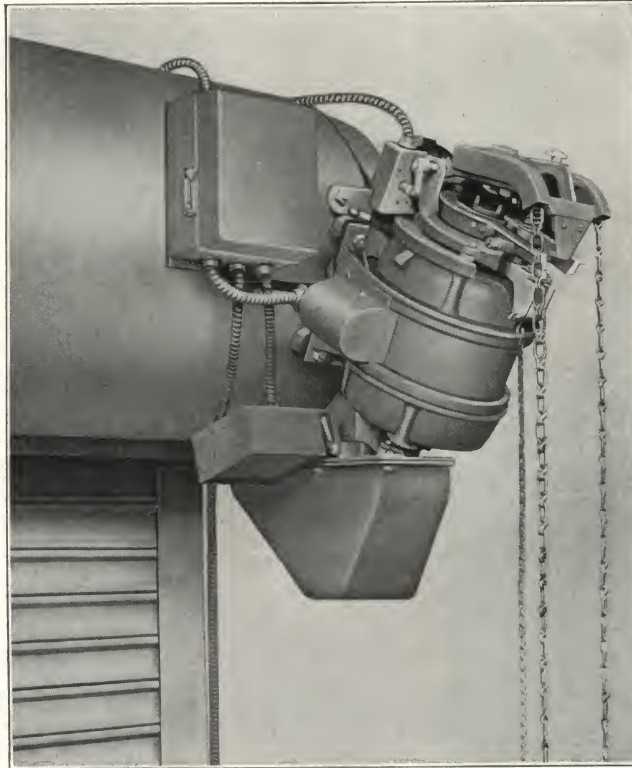
Kinnear Power Units are built by Engineers who have not only spent years of painstaking effort in designing a highly perfected operator but who are also familiar with the doors upon which they are used. As a result, the operator and door is a perfectly matched, efficient combination. More complete details and quotations on equipment exactly suited to your needs will be gladly furnished upon request. Complete current characteristics should accompany all requests for quotations.

For other Kinnear Electric Door Operating Equipment see pages 18 and 25. As it is impossible to list all Kinnear equipment in this catalog, should the type of equipment you require not be shown, write Kinnear for special recommendations.

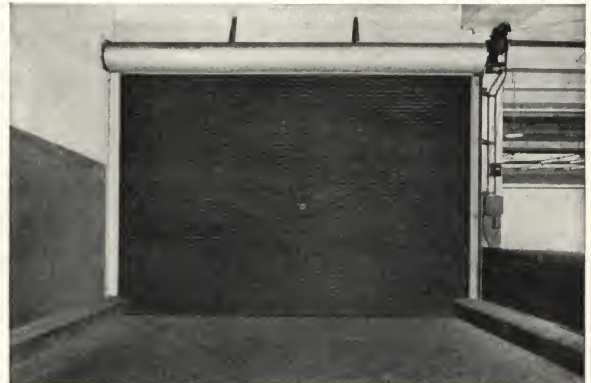
See page 18 for details on special control units.

Kinnear Operators are compact as will be noted from this installation . . . one of seventy-three electrically operated Kinnear Doors installed in St. John's Terminal, New York City. Part of a battery of 119 Kinnear Doors

One of a large installation of Kinnear Motor Operated Doors ranging in size from 42x21 ft. downward, provided with remote control with conveniently located operating stations.



Power unit mounted on bracket



K

DOOR CONTROL EQUIPMENT

*Magic-like Operation for
Any Type of Door*

In addition to the standard push button control equipment, Kinnear Engineers have developed various other methods of control which provide almost magic operation for any type door that can be motorized. Incorporating highly perfected electrical mechanisms, these controls are adaptable to any industrial or commercial opening where automatic door operation is desired. They prove particularly advantageous on such openings as entrance doors to garages and retail establishments, passage doors to kitchens, hospitals and industrial buildings, or other openings through which there is considerable traffic. As noted in the following, these control units are offered in a number of different combinations of equipment. When you have unusual requirements, regardless of how difficult they may seem, where equipment herein described is not applicable, write Kinnear Engineers for their recommendations.

PHOTO-ELECTRIC CONTROL

Kinnear Photo-Electric Equipment provides entirely automatic opening and closing of the door by the mere interception of a light beam. The advantages of this type of control are numerous. Where there is considerable traffic, it makes substantial savings in the labor time of operating doors manually. Also, operating quickly and smoothly, it speeds up service, gives a reception that is appealing to customers, and closing immediately after the person or car has passed through the opening it prevents the unnecessary escape of heat. In hospitals, where sanitation is important, it provides untouched opening and closing of the doors. In other words, Kinnear Photo-Electric Control is modern equipment for modern establishments; it has been perfected by specialized door Engineers.



Model P E—S D

Swinging doors on a restaurant kitchen equipped with a Kinnear Standard Swinging Door Operator and Photo Electric Control, the former being neatly encased above the opening and the latter remotely concealed. Facilitates service and effects economies in labor time. Described fully as (B) under "applications."



EQUIPMENT

In general, the photo-electric control consists of a light source provided with suitable bulb (and if necessary suitable lenses and reflectors) and an electronic photo tube, which is light sensitive, both provided with suitable housings. The housings are of various types depending upon the requirements for each installation. Where mounted on floors they are of the pipe guard type. For flush mounting in walls, suitable cover plates are furnished and, when necessary to mount equipment on faces of walls, they are furnished with suitable guards designed to deflect passing objects that might injuriously contact them. In some positions, visors are required to exclude extraneous light. Likewise special mirror reflectors are sometimes necessary to increase the number of crossings for the light beam.

In addition to the above, there is a control unit consisting of a grid-glow tube, relay and other accessories. The control unit is of the heavy duty type, the only moving part being the closing contactor of the heavy duty relay.

Important—Conforming to Kinnear's policy of offering only highly durable equipment built to the highest standards, it should be noted that the Kinnear Photo-Electric Control Unit uses a heavy duty type relay. In other words, no telephone or other delicate microammeter relays are used.

OPERATION

The light source projects a beam of light to a light-sensitive photo tube. The arrangement of the beam or beams is determined by the results required. Mirror reflectors can be located at intervals between the light source and photo tube and thereby reflect the beam of light back and forth across the opening path. When the light beam is intercepted at any place, it causes the photo tube to trigger off the grid-glow tube which is contained in the controller unit. This causes the grid-glow tube to function the heavy duty relay during the entire period of time the light beam is broken. As soon as the light beam is restored to the photo tube, the grid-glow tube functions to return the relay to its normal position.

The contacts of the relay in the grid-glow tube control unit are connected in the control circuit of the magnetic switch for the door operator so as to control the operation in opening and closing the door.

APPLICATIONS

The Kinnear Photo-Electric Control Unit can be designed to provide several arrangements of control for the door operator. A few of these arrangements

are described in general as follows and shown in Fig. 1 on page 19.

(A) The photo-electric equipment in the sensitive field method is so arranged that a sensitive field is built up by reflecting beams back and forth between the established distance known as the opening and closing lines. When a car intercepts this zig-zagged beam of light at any point, the door opens and remains open during the entire period of time that the car remains in any position, whether stationary or moving, within this field. This method provides full automatic control which is fool-proof and reliable and is the type of installation generally used for controlling swinging doors through which a tractor and train of trailers pass. It is also applicable for any industrial plant using hand trucks or tractors.

(B) The second method of installation used for entrance or exit doors in buildings for pedestrians. It is also efficient for passage doors in kitchens, hospital rooms and many other similar places. In this layout, the pedestrian passes through the beam of light and the door opens. It is then closed in an established length of time by a time relay device, providing no other person enters through the light beam. This arrangement is intended to keep the door open where the traffic through the door is continuous to the extent where the intervals between light interception does not exceed three seconds.

(C) A third method of installation provides two beams of light, one on each side of the door. The interception of either beam causes the door to open and the interception and restoring of the opposite beam causes the door to close. This method is employed where there is no reasonable chance of two objects or persons entering the space between the light beams contemporaneously.



(D) The fourth method is intended mainly for garages and is arranged so that a car or person intercepting the beam will operate and open the door. But the door is closed only by push button.

(E) The fifth type of installation is also applicable mainly to garages. Especially where the door is located on the lot or side walk line, where the car may be delayed and remain in the opening for a short period of time in order to wait on the passing traffic. In this case a beam of light is projected between the door jambs. The door is opened by means of a push button but will close only after the car has passed through the opening. In this case, the control closing the door is actuated only after this beam of light has been intercepted and then restored.

In practically all installations, it is possible to arrange the photo-electric control so that it can be operated by automobile or other large objects but not by pedestrians. This method of control requires extra projected beams of light and necessitates more equipment. Also, devices can be supplied at extra cost which will project invisible beams of light. This, however, is possible only where the beam is projected for a comparatively short distance.

There are other possible arrangements of the photo-electric equipment and the Kinnear Engineering Department will gladly offer recommendations and furnish layouts upon request.

INSTALLATION

Depending upon the model furnished, Kinnear Photo-Electric Equipment is shipped complete with the exception of wiring, conduits and materials that may be required for the proper reception of the equipment. Units are built for either AC or DC current, this must be specified. When given the opportunity to work with the Architect during the designing of a new building, a more attractive installation can often be arranged. As in the case of other Kinnear equipment, trained installation mechanics are available to relieve the contractor or owner of installation responsibility. However, detailed installation instructions enables the purchaser to easily arrange for his own installation.

SENSITIVE MAT CONTROL

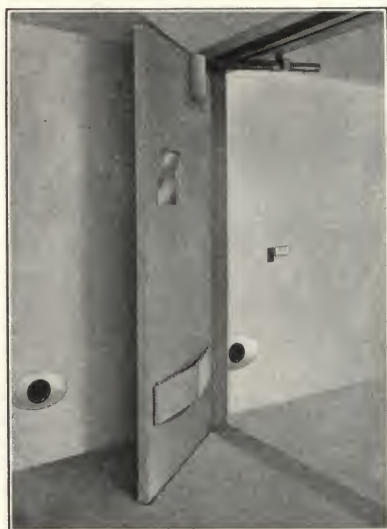
For pedestrian use only, Kinnear Engineers have developed a special type of mat control which functions to operate doors in a manner similar to that described as application (B) under photo-electric control. This mat may be installed under battleship lin-

SWINGING DOOR OPERATORS

For conditions where swinging doors are the only practical type, Kinnear Swinging Door Operators, discussed below, are offered. Electrically operated, they may be controlled, by push buttons, photo-electric or sensitive mat control, which has been described in the preceding.

HEAVY DUTY SWINGING DOORS

The Kinnear Heavy Duty Swinging Door was designed primarily for openings through which power operated tractors or small trucks operate. The doors are of heavy steel construction and the operating unit is located in the door proper, making them particularly suited for locations where limited headroom only is available. These doors are positively driven in both the opening and closing directions. They are equipped with collapsible steel plate bumpers, which if depressed, release the motor operator and thus allow the door to swing freely and away when bumped.



Model P E—H D

A Kinnear Photo-Electric Controlled Heavy Duty Swinging Door for applications, such as described under (A) in the above description on Photo Electric Controls. Type of equipment now being installed in the new Philadelphia Post Office

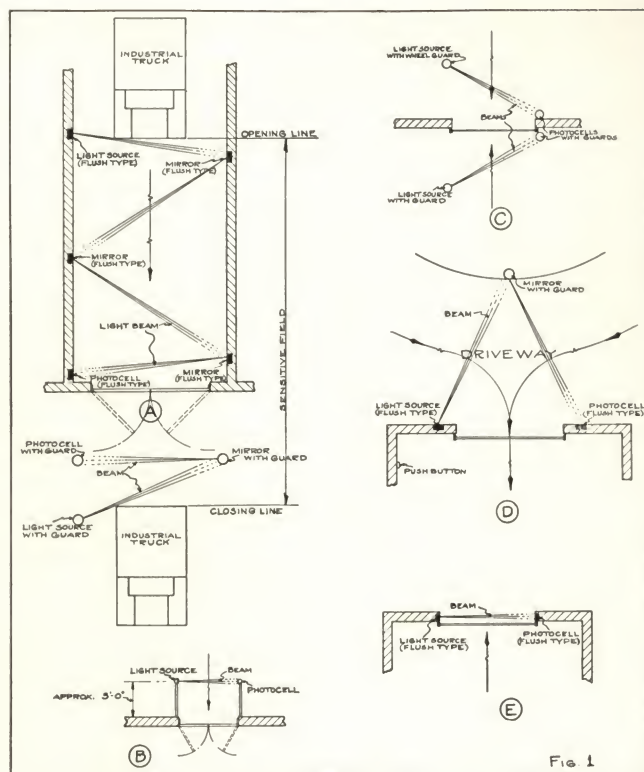


Fig. 1

leum, rugs or other suitable floor covering. It is less expensive than photo-electric control, yet is equally as satisfactory for the purpose intended, affording the same advantages and economies. Operation is initiated by walking over an area under which the sensitive mat has been placed. The person's weight causes a low voltage electrical contact which actuates a heavy duty timing relay, which in turn controls the door.

After the door has been pushed open due to collision with a tractor or truck, it will automatically relatch the operator without any personal attention. This type of door is ideally suited for use with Kinnear Photo-Electric Control in a manner described on application (A) under photo-electric control. When so equipped, it provides fully automatic arrangement.

STANDARD SWINGING DOOR OPERATOR

The Kinnear Standard Swinging Door Operators are for installation on entrances and exits of buildings such as department stores, restaurants, etc. These operators, (for illustration, see page 18) drive the doors open quickly with a positive driving force and they close with a gentle checking action. These doors may be pushed or held open manually without the necessity of disconnecting any of the operating mechanism. This permits abrupt contacts and also allows the door to be opened manually and closed with the automatic door closer in case of power failure. When equipped with photo-electric control or sensitive mat control for use in a manner described under Application (B) in the preceding, the door automatically opens when it is approached. The door then remains open for a period of time sufficient to allow a pedestrian to pass through, after which time it closes automatically. If the door is in an intermediate closing position at the time another pedestrian approaches, the door will immediately revert to its full open position. When a number of people pass through, the door stays open until the last person has passed through.

GENERAL

Kinnear Door Control Equipment and Electric Operators have such a multiplicity of practical applications, it is advisable to consult a Kinnear Engineer whenever contemplating equipment of this nature. Equipment described in the above can be supplied in various combinations or in individual units. Through Kinnear's specialized door experience, it is frequently possible, by studying your particular needs, to suggest a special application that will considerably enhance the value of the installation.



SPECIFICATIONS

STEEL ROLLING SERVICE DOORS

Openings—Shall be equipped with Kinnear Steel Rolling Doors.

Curtain—Shall be of interlocking slats, rolled not drawn, formed in easy curves without sharp bends, from open hearth steel gauge (see note below). Slat to be of section sufficiently large to give curtain strength to safely resist a wind load of 20 lbs. per sq. ft., but for doors exceeding 25 ft. in clear width curtain shall be provided with lugs as windlocks to engage bars in guides and to lock the curtain against wind pressure. Each alternate slat shall be fitted with malleable endlocks $\frac{3}{8}$ in. thick. Bottom bar to be two angles placed back to back.

Note: The gauge of the slats to be specified according to the following chart:

Height	8' 0"	12' 0"	28' 0"
Width		22 U. S. Gauge.	
		20 U. S. Gauge	
		18 U. S. Gauge	
		18 U. S. Gauge (with windlocks)	
	33' 25' 20' 13' 6"		25' 18' 12' 6"

Galvanizing—To be hot process, free from blisters and other imperfections, with a high grade pure zinc coating heavy enough to add 0.9 oz. of weight to every square foot of flat metal.

Counterbalance—Curtain to be coiled on a pipe of size sufficient to carry the door load with a deflection not to exceed .03 in. per ft. of opening width, and to be evenly balanced by helical springs contained in pipe.

Coil Brackets—To be of high grade gray iron designed to house ends of the coil.

Hood—The coil to be housed with a sheet metal hood No. 22 U. S. gauge for doors over 20 ft. wide and No. 24 U. S. gauge for narrower sizes.

Guides—Built of structural steel to form a slot of sufficient depth to retain curtain for doors under 25 ft. in width in guides against heavy wind pressure without using the windlocks, but for doors exceeding this width guides must be provided with anchors for windlocks.

ALTERNATES FOR STANDARD SERVICE AND MOTOR OPERATION

Standard Service

Operation—To be—

- (A) Manually by means of handles on bottom bar.
- (B) Hand chain, sprocket and gear; maximum allowed pull 35 lbs.
- (C) Crank, shafting and gear; maximum exertion on crank 20 lbs.

Gear—To be of best grade gray iron, cast teeth machine moulded from machine cut patterns.

Motor Operation

Operation—Doors to be operated by means of an electric motor. The control circuit shall be closed by means of push buttons, and automatic limit switches will break circuit at termination of travel. Door to be stopped at intermediate points by stop button from where it can then be operated in either direction.

Motor—To be high starting torque elevator or hoist motor, raising or lowering curtain at approximately .67 ft. per second.

Reduction Gear—Of the power unit shall be machine cut gear completely housed and running in oil bath.

Emergency Operation—A control for automatically engaging a sprocket and chain and releasing the brake, shall be operable from the floor. A device which shall automatically prevent the motor from operating until emergency sprocket is disengaged shall be provided. Emergency operation shall not affect timing of limit switch.



Control Switches—Shall consist of 3 push button switch, "open," "close" and "stop"; remote control magnetic enclosed switch panel for reversing motors, and automatic limit switch.

Erection—All doors shall be erected by the manufacturer or his authorized representative and shall be guaranteed against defective material and workmanship for a period of one year from the date of completion of erection.

Wiring—Wires, wiring, conduit and fuses are not furnished or erected by Rolling Door Contractor, but are to be installed with the control switches by others, according to diagrams furnished by door contractor.

STEEL ROLLING DOORS LABELED BY NATIONAL BOARD OF FIRE UNDERWRITERS

Openings—Shall be equipped with Kinnear Steel Rolling Automatic Fire Doors of the Akbar Construction.

Label—All doors to bear the label of the National Board of Fire Underwriters.

Note: The National Board of Fire Underwriters label and classify the Akbar doors, as Class "A" for fire walls, "B" for vertical shafts, "C" for corridor and room partitions and "D" for exterior walls, where the opening does not exceed in area 80 sq. ft. for Class "A," "B" and "C" doors and 100 sq. ft. for Class "D" doors, or 12 ft. in width or height. Openings exceeding these dimensions in size and not exceeding 24 ft. 0 in. in either dimension are furnished with Underwriters' Oversize Label.

Operation—All doors to be automatic closing in the event of fire. Doors not exceeding 8 ft. high or 80 sq. ft. in area can be operated by means of handles on the bottom bar; but larger sizes shall be operated through reduction gear by hand chain (or crank).

Automatic Closing Device—To be thermally controlled by means of a fusible link. The door shall be forced to a closed position by an auxiliary spring in spring barrel which is inoperative during normal operation and released by thermal control without affecting the permanent adjustment of the counterbalance spring.

Counterbalance—Curtain to be evenly balanced by helical springs contained within spring barrel. Counterbalance to be permanently maintained and doors shall operate easily both normally and after automatic closure.

Safety Device—To be an automatic governor of escapement type inoperative during normal operation but which shall so control the speed of the curtain during automatic operation as to prevent injury to persons accidentally under the door.

Curtain—To be of Kinnear interlocking slats rolled from copper bearing steel with no sharp bends and hot galvanized. The ends of the slats to be fitted with endlocks $\frac{3}{8}$ in. thick. Gauge of metal and type of endlocks as established by National Board of Fire Underwriters for the specified class risk.

Gauge of metal to be No. 20 U. S. gauge for Class "A," "B" and "C" doors and No. 22 U. S. Gauge for Class "D" doors.

Brackets—To be high grade iron with roller bearings in bracket for revolving end of barrel.

Guides—To be of structural steel $\frac{3}{8}$ in. thick arranged for expansion at all rivet and bolt connections.

Hoods—The coils to be enclosed with sheet metal housing of No. 24 U. S. gauge. For interior wall doors hoods to be furnished with a drop hood thermally controlled, closing against the coil when automatically released, but not interfering with coil during normal operation.

Paint—All parts of the door except mechanism to be given one shop coat of red oxide; the mechanism to be dipped in flat black.

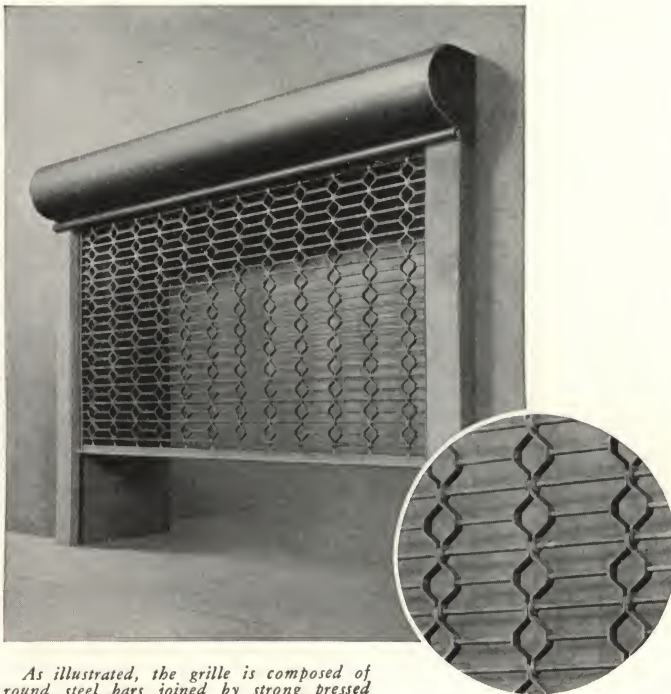
Erection—All doors shall be erected by the manufacturer or his authorized representative and shall be guaranteed against defective material and workmanship for a period of one year from the date of completion of erection.

ROLLING GRILLE

Steel—Stainless Steel
Bronze—Aluminum

ADVANTAGES

The Rolling Grille is another Kinnear development. Embodying the same principle of construction and built by the same competent and skilled mechanics as the Kinnear Rolling Doors, the Rolling Grille is a product of proven merit ideally suited for many new and modern uses. It offers a permanent installation that can be quickly opened and closed, providing a safeguard against trespassing, burglary and kidnapping—without the sacrifice of the passage of air and light or obstruction of vision. Coiling in a small space above the lintel it occupies no useful space. Accurately counterbalanced it is easily opened or closed and can be locked closed. Attractive in design and built in various metals, it harmonizes with any architecture. Its practicability for numerous purposes is shown by its rapidly increasing popularity.



As illustrated, the grille is composed of round steel bars joined by strong pressed steel links, affording an artistic design that is strong and durable. The spaces between the component parts are small enough to prevent a man's hand being inserted through the grille work.

USES

While the Rolling Grille readily suggests itself for a multiplicity of uses a few of the more common uses are listed as follows: Exterior and interior commercial openings; school buildings, store fronts, concessions, show windows and display rooms containing valuable merchandise; day time protection of vaults, bank tellers; industrial openings; elevator shafts; commission houses containing perishable merchandise; piers and platforms. Private and public homes; residences; etc.

Left: A large grille for New Orleans delivery. Installed in the Kinnear plant for examination before shipment. . . illustrates the care taken with all Kinnear Doors prior to delivery to the job. Operated by chain and reduction gearing.

Right: Showing the practicability of Kinnear Rolling Grilles for use on all types of interior concessions.



GENERAL CONSTRUCTION

The Grille proper is made of round steel bars carrying or connected by strong pressed steel links (also other metals). It coils in a barrel journaled in heavy cast iron brackets, and is locked in and travels in steel guides mounted at the side of the opening. Helical springs enclosed in the barrel provide perfect counterbalance. A hood of suitable design and metal is furnished for covering the barrel and coil. Customary to Kinnear practice, each grille is individually built to meet the particular requirement. Similar to the steel rolling door, the grille can be mounted on the face of the wall, with coil above the bottom of the lintel, or in the opening with coil between jambs or in reveals provided. The building can be designed to house and conceal all working parts.

The Grille can be arranged for operation by means of handle in bottom bar; chain and reduction gearing; crank and reduction gearing; or electric power equipment. The method employed usually being determined by the size of the grille.

For positive protection a secure locking arrangement is provided, the type depending upon the method of operation employed.

Whenever you have need for a guard of the grille type, write Kinnear Engineers for special recommendations on this new and modern equipment.

SPECIFICATIONS

Grille—Composed of round steel bars joined by pressed steel links of octagonal shape. Alternate bars welded to links. Remaining bars hinged so as to provide smooth operating, flexible grille. Bars $\frac{1}{8}$ in. diameter and links formed from $\frac{3}{8} \times \frac{1}{8}$ -in. steel bars.

Counterbalance—Oil-tempered helical springs wound from especially heat-treated steel and tempered with oil, mounted on cold rolled polished steel shafting. Spring and shafting carried in heavy steel barrel, which has a three-fold purpose; viz: encases counterbalance mechanism, is load carrying beam, and provides axis around which grille coils. Barrel is of sufficient diameter to avoid deflection in excess of .03 in. per lineal foot of barrel.

Barrel Rings—Barrel is provided with malleable iron rings of special involute shape, designed to coil the grille with a uniformly increasing diameter, thereby insuring uniform counterbalance.

Barrel Plugs—Cast iron plugs of special Kinnear design to eliminate excessive strain at spring ends.

Endlocks—Side edges of grille are provided with malleable iron endlocks of special Kinnear design, which engage in guides providing a bearing surface and also preventing the grille from leaving guides in case of excessive deflection.

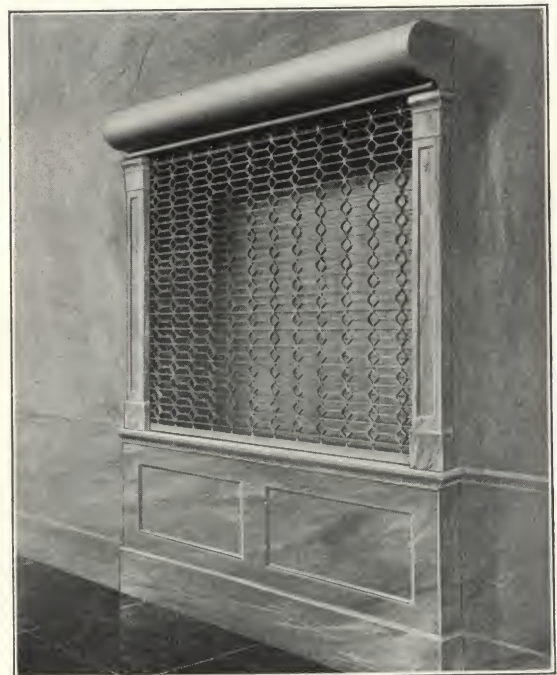
Bottom Bar—Two structural steel angles. Increases grille's strength and facilitates operation.

Guides—Structural steel angles, designed to give groove depth from 2 to 8 in. So arranged to engage endlocks and prevent grille from leaving guides under abnormal strain.

Brackets—Heavy grey iron castings with mouth and stops cast integral and with high factor of safety. Bearings of large proportions for barrel spindles.

Adjustment Wheel—Mounted at end of bracket for increasing or decreasing tension on counterbalance spring.

Hood—Neatly formed of hot galvanized sheet steel reinforced with beads and flanges.



WOOD ROLLING DOORS and PARTITIONS

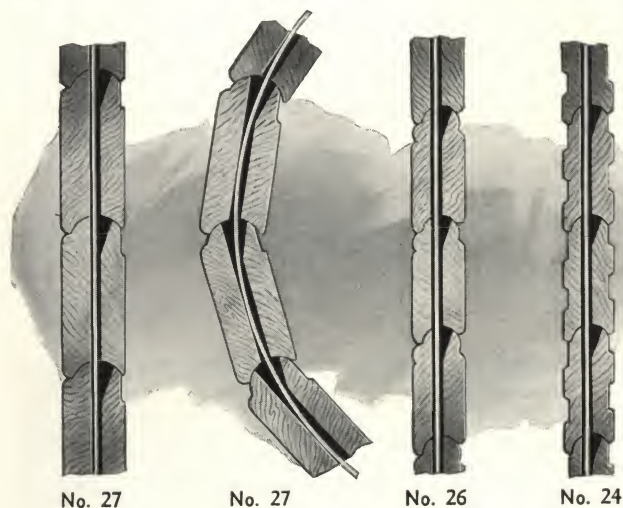
Kinnear Wood Rolling Doors and Partitions are designed primarily for interior use in schools, churches, etc., for subdividing large rooms. They lend themselves well to architectural treatment. They may be concealed in paneled casements, relieved by moulds and cornices to produce the desired effects. The wood of which the slats are made, as well as color tones, can be made to harmonize with room interiors.

Wood Rolling Doors are also very practical for exterior uses, in cases where chemical action is liable to deteriorate metal, such as around chemical plants and roundhouses.

They can be operated manually, mechanically or electrically, depending upon size. Operating devices, when furnished, can also be concealed in the casing. As the application of these doors depends so much on the individual building design, it is desirable to call on Kinnear Engineers at the time the building plans are being prepared.

CONSTRUCTION

Wood Rolling Doors operate substantially the same as Steel Rolling Doors. The curtain is composed of artistically shaped slats made



Kinnear Wood Rolling Partitions, for separating class rooms in a church. All mechanism is concealed and slats are made of a wood to harmonize with interior finish. Posts between partitions can be removed

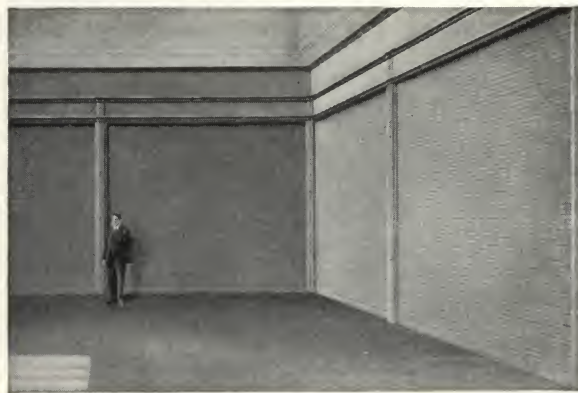
of long leaf pine, cypress, quarter-sawed oak or birch, assembled on phosphor bronze tapes. The opening through which the tape or ribbon passes is so shaped that during flexure of the curtain there is no change in the relative length of the tape or curtain. Nor is there any danger of pinching the tape. Illustration shows how the curtain coils on a barrel in the casement. This door can also be arranged for mounting on the face of the wall. Casing and grooves are not supplied by Kinnear, but should be included in the general carpenter work. Slats can be finished, as desired. Slats No. 24 and 26 are for interior use and No. 27 for exterior use. They are given a preservative coat when used for exterior purposes.

VERTICAL SLIDING DOORS

This is one of the Kinnear types especially suited for freight houses, piers and warehouses, where light through the door is essential.

The door comprises two or more sections consisting of a trussed frame covered with sheet metal or corrugated iron, hung independently with chains connected with counterbalance weights. Operated by means of endless chain and suitable reduction gearing. Where doors are mounted on steel columns, guides and weight boxes should be incorporated as a part of the column, and should be supplied by the steel contractor, according to details supplied by Kinnear. This type can also be supplied to be mounted on the face of the wall, in which case the weight box and guides are furnished as part of the equipment. When a door of this type is desired, write for more complete information and detailed recommendations. (Doors can also be furnished in wood.)

A few of the 57 Kinnear Vertical Sliding Doors installed in a U. S. Post Office. The saving in floor and usable wall space is self-evident. And note their clean-cut appearance which is in keeping with modern building design

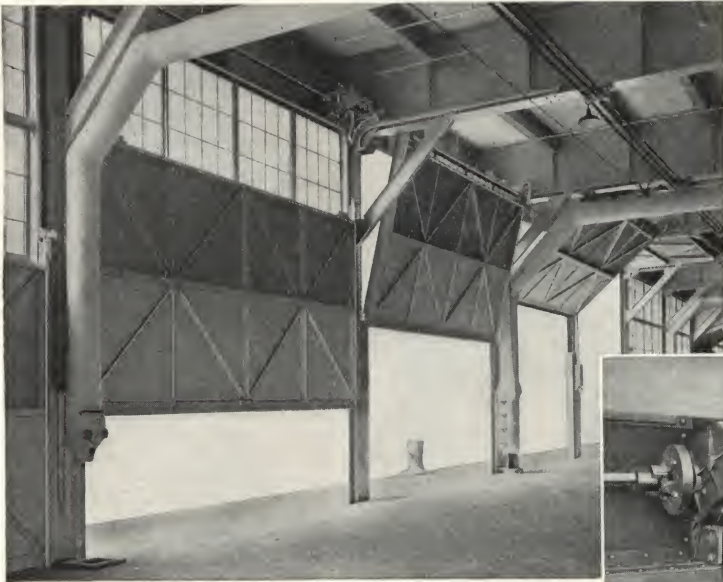


K

BIFOLDING DOORS

NO. 3, WEIGHT COUNTERBALANCED

This door is particularly suited for openings 12 ft. or higher, where heavy construction is desirable. Permitting the use of sash sections, it provides heavy duty service as well as admittance of light. Though built in both wood or steel, they are generally used for freight sheds and piers, thereby making steel preferable.



Illustrating how the two sections of a Bifold No. 3 telescope and then raise to an overhead position . . . out of the way

Constructed of two sections made up of heavy galvanized steel sheets applied with closely butted joints to an angle frame made of members 4 in. or larger. The lower section telescopes with the upper and then the two sections, as a unit, slide to the overhead position on heavy steel horizontal tracks. The door is counterbalanced by cast iron weights encased in the columns. Operation is usually by chain and reduction gearing. Through the use of high quality bearings in all bearing points, only

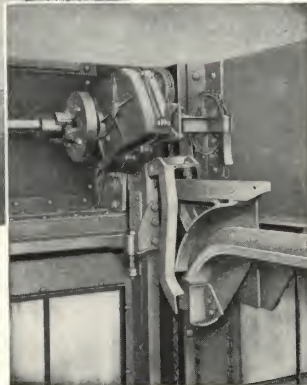
a small amount of energy is required to start the door in motion.

Counterweights are connected to the door by block chain of high safety ratio, built of die formed links, producing not only a strong but also accurately running chain over the sprockets. To prevent the accidental drop of the door, in case of lifting chain breakage when operating such tremendous weight, an automatic safety lock is provided. A cam grip, which operates on an angle guide and is held open by the weight of the door, is closed by a heavy spring force. Should the lifting chain accidentally break, the cams will grip the angle guide and support the door in place. The action of this lock is similar to an elevator safety lock and prevents the door from dropping should either or both of the lifting chains fail.

When the door is used on the upper decks of a pier it may be arranged to provide a barrier. The lower section of the door can be subdivided into two parts, the lower part being about 4 ft. high and detachable from the upper part of this section. The door can be raised with the two parts operating as one section, or the lower part can be detached and allowed to remain in the opening as a barrier or guard to prevent pedestrians from passing through the opening.

The chain sprockets are driven by the hand chain through spur gear reduction. These reduction gears are of steel, having machine cut teeth and are enclosed in an oil-tight housing. All bearings supporting the counterweights or doors, are supplied with grease-tight roller or ball bearings.

Every detail is designed for heavy duty. It is the most advanced development in Pier Warehouse Doors that has been made.



A look at this mechanism is evidence of the excellent design and precision workmanship in a Kinnear Door

Kinnear Doors are as modern as this new Pier 88 which is fully Kinnear equipped



A portion of the 64 Kinnear Steel Bifold (No. 3) Doors, part of 123 Kinnear Doors, installed on Quebec Pier Sheds No. 25 and 26, Quebec, Canada. Sizes range from 18 ft. x 14 ft. 6 in. downward. The other doors are the vertical lift type, sizes 18 ft. x 9 ft. and smaller

Illustrating how the Kinnear Steel Bifolding Doors installed on Pier 88, New York Harbor, are arranged to provide a barrier on the upper decks. Lower section is disconnected and remains in place, allowing the upper section to be opened



K

BI-FOLD NO. 5

Spring Counterbalanced

This is, without a doubt, one of the most practical bifolding doors for average size openings now on the market. It requires less clearance at both head and sides of opening than do most other types. Permitting the use of sash, approximately two-thirds of the upper section of the door can be used for the admittance of light. Constructed of either wood or steel, the Bi-fold No. 5 provides heavy duty service as well as the other operating advantages common to all Kinnear Upward-Acting Doors. Also, its simple and sturdy mechanism makes maintenance a negligible factor and renders quick and easy operation.

This door is of a jack-knife folding type, constructed of two leaves or sections, hinged at the center and

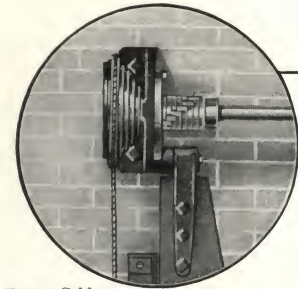
SALIENT FEATURES

Though the Bi-fold No. 5 embodies many distinctive features, both in the way of design and care in manufacture, the following describes the features illustrated and ones which are most pertinent.

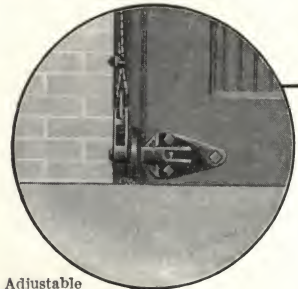
In order to prevent the drums from being revolved in the wrong direction when the door is down, and thus unwind excess cable, the torsion shaft carrying the spring is provided with special lock set which does not permit the shaft to be revolved only so far as to unwind a required amount of cable. This is a safety feature which insures constant tension on the cable, holding it to the groove and the sheave and eliminating the possibility of slack.

The cable connection to one roller is provided with an adjustment for varying the tightness of the cable and this permits the bottom of the door to be leveled and to insure an even pull on both cables. Also note the heavy corner castings, peculiar to all hardware used on Kinnear Doors.

The top corners of the door are hinged on steel pins carried in fixed brackets attached to the wall. The revolving part of the hinge is attached to the door and car-



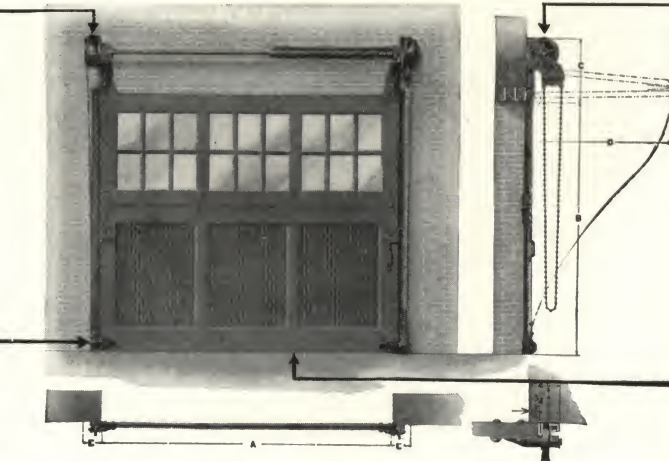
Excess Cable Lock



Adjustable Cable Attachment

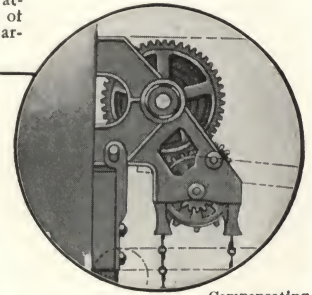
attached to the wall with hinges at the top corners of the top leaf. The lower corners of the bottom section are carried on ball-bearing rollers which travel in guides attached to the wall. Cables are attached to the pins at each of the rollers and are wound on spiral drums. The door is operated up and down by driving the drums with hand chain, through reduction gear, winding or unwinding the cable as required.

The doors are counterbalanced by torsion springs on a steel shaft placed above the lintel in the same manner as for steel rolling doors. This counterbalance can be very accurate and produce a very easy operating door.

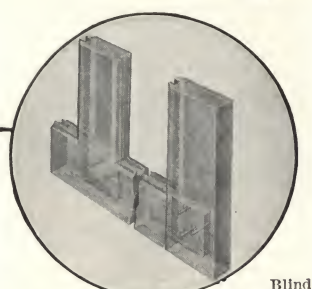


CLEARANCES REQUIRED FOR BI-FOLD NO. 5

	Height B, feet									
	6	7	8	9	10	11	12	13	14	15
C, in.	26 1/2	26 1/2	26 1/2	26 1/2	28 1/2	31	33	35	35	37
D, in.	46	52	58	64	71	78	85	92	98	105
E, in.	8	8	8	8	8	10	10	10	10	10



Compensating Hinge



Blind Mortise Joints

ries a slotted pin hole. In opening the door, the action of the center hinge raises the top section a small amount, but this amount produces considerable binding in the hinges unless proper compensation is made. The slotted hole in the top hinge compensates for this vertical movement, eliminates all hinge binding and provides for an easy operation. This is an exclusive Kinnear feature.

All wood frames are 2 1/4 in. thick jointed together at the corners and at muntin connections with blind mortise joints, glued with waterproof glue and pinned in place with steel pins. THE KINNEAR MANUFACTURING CO. uses the blind mortise at all joints in spite of the fact that it is the most expensive construction. Open mortise joints permit moisture to enter the joints and the heart of the timber, which causes the timbers to rot or warp. The blind mortise being sealed with waterproof glue, excludes all moisture, thereby insuring lasting service.

A special panelled Kinnear Steel Bi-folding Door (No. 5) on the Columbus Incinerator, Columbus, Ohio. Operated by chain and reduction gearing and counterbalanced with torsion spring. Opening overhead, it reduces space required for weighing platform.

Floor and wall space is the "stock in trade" in a freight shed or warehouse and consequently is valuable. Here is a portion of the 52 Kinnear "space saving" Bi-folding Doors installed in a Chicago, Burlington & Quincy freight shed in Chicago.



K

ROL-TOP DOORS

The Safety Counterbalanced Sectional Wood Door

Like other Kinnear Doors, the ROL-TOP Door opens upward affording maximum convenience, efficiency and permanence of service, combined with the advantage of the admittance of light. It is ideally suited for old or new residence garages, service stations, warehouses, factories, boat houses and other buildings.

CONSTRUCTION

Attractively paneled wood sections are hinged together with malleable iron hinges and fitted at both ends with heavy duty ball-bearing rollers. By means of these rollers, which operate in steel tracks or guides mounted on the jamb and extending horizontally back from the lintel, the door rolls to the overhead position. One or more springs (see Deluxe and Standard Models) connected to the door by Trulay plow steel cable accurately counterbalances the door. A special sealing device and heavy cylinder lock makes the door weather-tight and burglar-proof. It can be arranged for operating manually, mechanically or electrically. Sections can be either solid or arranged for glass. The door throughout is built to the highest standards of workmanship and materials.

ADVANTAGES

The advantages of ROL-TOP are numerous. It raises over snow, ice and swollen ground. Never sags, sticks or binds. Out of the way of wind or car, staying where it's put. Lends itself to all styles

of panel designs. Saves wall and floor space, permitting cars and other objects to be placed within a fraction of an inch of the door. Perfectly counterbalanced, it opens easily, rapidly and smoothly. Strong, rugged construction insures permanence and insignificant maintenance.



DISTINCTIVE FEATURES

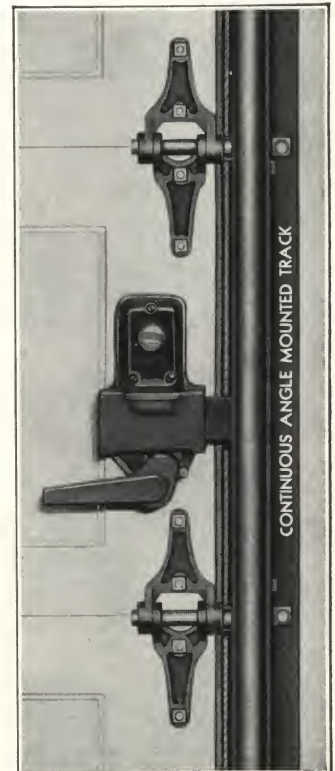
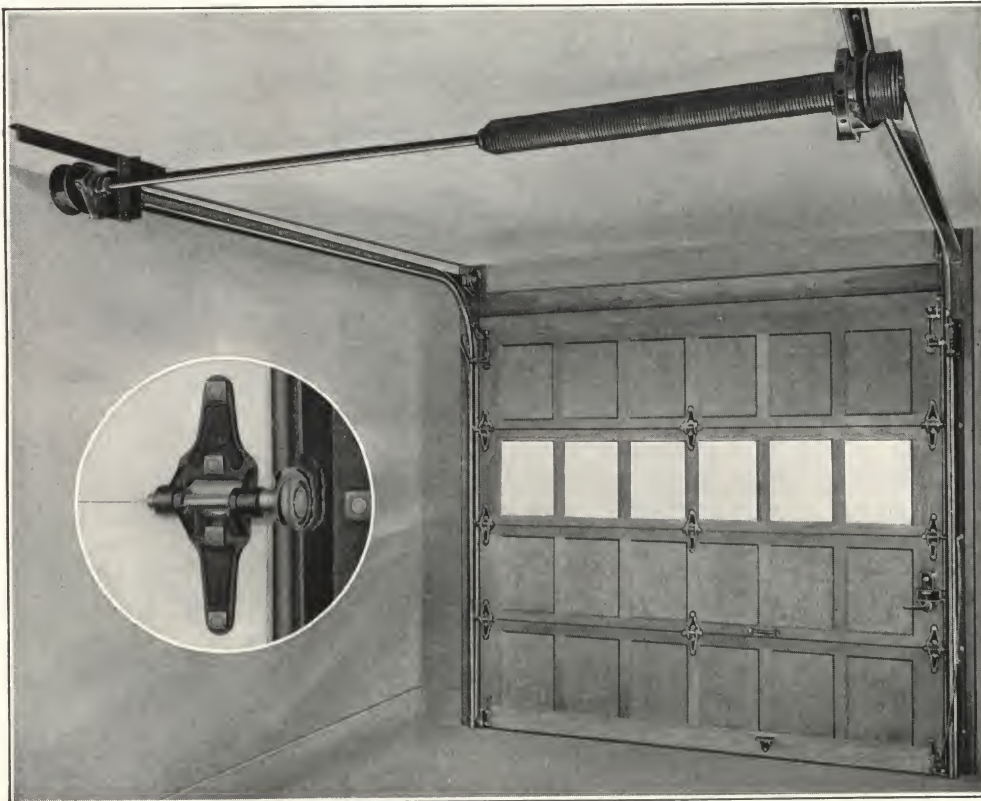
ROL-TOP embodies a number of special features that enhances its smooth, easy operation and adds to its permanence and dependability. They are:

Safety Counterbalance—On the Deluxe Model ROL-TOP, a torsion spring with a high factor is mounted on a solid steel shaft, in a fixed, harnessed position. In case of accidental breakage, it cannot damage life or property. It is neat . . . nothing to jangle or flop around. Pulling uniformly on both sides of the door, it insures smoother, easier and more quiet operation. It is the same counterbalance principle that has made Kinnear Steel Rolling Doors famous.

Continuous Angle Mounted Tracks—ROL-TOP tracks are mounted on the jamb with continuous angles, providing a rigid, strong mounting that will stand abuse, reduce vibration and noise, and insures permanent alignment.

Heavy Hardware—Massive malleable iron hardware applied with through carriage bolts adds increased durability to ROL-TOP.

Closing Bracket—A throated bracket at the top of the door automatically forces the top section of the door snug against the



De Luxe Model

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jamb and lintel, adding an extra precaution toward the elements.

Sealing Device—ROL-TOP is made weather-tight by an unique triple-contact "Keystone" sealing arrangement. Graduated rabbets on the end of the door fit into sloping wood or steel strips applied to jamb. Like a "keystone" the instant the door starts in the upward movement, it has free action. When closed, it fits snugly to the jamb from top to bottom.

Ball-Bearing Rollers—Especially designed heavy duty rollers are used. They have a one-piece solid steel tread operating around hardened steel race and sleeve. Operating on a shaft made with a shoulder and independent of the hinge, it is *free floating* and yet locks the door securely in the tracks.

Cylinder Lock—A rugged spring-release slide bolt type of lock fitted with a standard make cylinder is furnished. It is operated by key outside and knob inside.

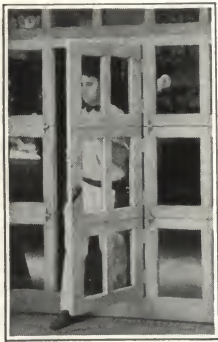
Special Framing—Rails and stiles are connected by blind mortise joints glued with casein waterproof glue. No open mortise joints (which permit the joints to absorb moisture and rot) are employed. Always specify closed or blind mortise joints.

STANDARD MODEL

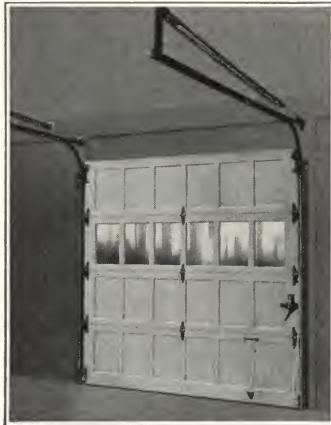
Where original low price is more important than added years of unusual service, the Standard Model ROL-TOP is offered. It operates in the same manner as the Deluxe Model described on page 23. The door construction is also similar, but counterbalance is accomplished by the old conventional arrangement of two stretch springs placed parallel to the tracks. One spring is connected to each side of the door by means of pliable plow-steel cable running through ball-bearing sheaves. Hardware, angle mounted tracks, sealing device and lock are the same as used on the Deluxe Model. The Standard Model is built in any size from 8x7 ft. to 12x10 ft. and also in widths up to 16 ft. when height does not exceed 8 ft. While it offers a good door value, it should be carefully compared with the advantages of the Deluxe Model before a decision is made.

Considering the long service obtained from a garage door the difference in cost of the two models is negligible compared to the added counterbalance feature of the Deluxe Model.

Where access through a large opening without operating the main door is desired, the wicket or pass door offers an ideal arrangement, resulting in a saving of time, labor and heat. It is strongly built and equipped with spring latch and arranged for securely locking it into place before the major door is opened. Can be built in any size ROL-TOP



ROL-TOP is being specified by the major oil and tire companies. They have found that its convenience is not only more attractive to the public than old style doors but also substantially reduces maintenance of the service openings



Standard Model

ANY SIZE

While ROL-TOP is built in the seven stock sizes listed below, and is of the conventional panel design, it is built on special order in any practical size and of a great variety of woods and panel designs. Where individual architectural effects are desired, ROL-TOP is particularly adaptable.

STOCK SIZES

8 ft. x 7 ft.	15 ft. x 7 ft.
8 ft. x 7 ft. 6 in.	15 ft. x 7 ft. 6 in.
8 ft. x 8 ft.	16 ft. x 7 ft.
	16 ft. x 7 ft. 6 in.

When of the conventional panel design, any number of light sections (with-out glass) can be furnished without extra cost. Special designs furnished as specified.

In conjunction with a wide range of auxiliary equipment, some of which is briefly described on page 26, ROL-TOP can be adapted to meet any individual door requirements.

When confronted with a door problem or when desiring a special size of design, send us a sketch of what is needed and details will be supplied.

INSTALLATION

ROL-TOP is complete, being shipped with hardware applied to the door sections, complete erection instructions and all other materials, except glass and other materials that may be required to prepare the opening. A competent carpenter can therefore easily install it in old or new buildings . . . the average stock size garage doors requiring approximately 3 to 4 hours' time for installation.



Showing the chain and gear mechanism employed when door is beyond a size practical for manual operation. Recommended on all extremely large doors. When used, the door is also equipped with a device for synchronizing the movement of the door with the reduction gearing, a device which also starts the door in its downward travel

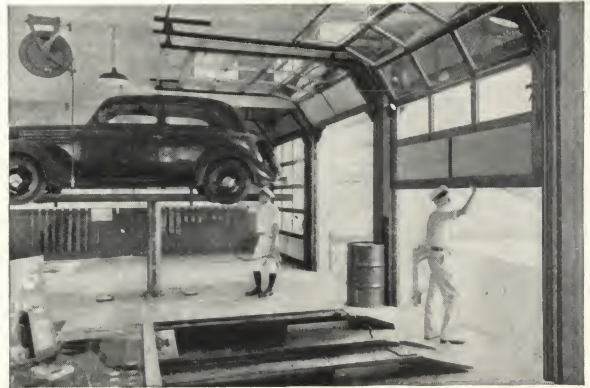
For clearances, opening preparation, etc. see page 27. As noted, unless the door is applied to steel it is recommended that the opening be framed on the inside with 2x6-in. timbers, to provide a smooth, secure foundation for vertical tracks. Hangers for horizontal tracks preferably steel furnished by others.

In case of large installations, when the owner desires, Kinneer Trained Erection Crews may be secured for handling the complete erection.

DATA WHEN ORDERING

To insure against error, it is recommended that a sketch of the opening condition (see page 27 for dimensional requirements) be furnished at the time of ordering, noting width of opening from jamb to jamb, height of opening from floor to lintel, type of wall and jamb construction (if the recommended 2x6-in. timber framing is not used), headroom and side clearance available, desired clearance under horizontal tracks and distance back from the face of wall for horizontal tracks. Also note number and location of sash sections (if one is sufficient it will be third from bottom unless otherwise specified), whether door is to be primed and if locks on two or more doors are to be keyed alike. Give current characteristic if door is to be motor operated.

Where ROL-TOP Doors are installed in lubricatoriums they are provided with special bi-lift tracks, which carry the door high enough to clear the hydraulic lift. As illustrated below, this type also has counterbalance spring placed above the lintel



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STEEL ROL-TOP



By combining the durability of a steel door with the convenience and facilities for light of the overhead type of door, the Steel ROL-TOP is becoming increasingly popular for heavy duty uses, such as factories, warehouses and commercial and industrial buildings. It will withstand excessive hard usage, and being fire repellant affords a degree of fire protection.

In general, the advantages, construction, operation and installation are similar to the wood ROL-TOP described immediately preceding. The door proper is composed of interlocking sections approximately 15 in. wide, made up of heavy steel plates with rolled beads, which not only form the hinge but also provide re-enforcement for the door sections (see illustration of interlocking hinge). Any number of sections can be provided for sash and when desired metals other than steel can be used.

A rugged lock with standard make cylinder can be operated from inside or outside. Counterbalance is of the "Safety" type composed of torsion spring on a solid steel shaft.

Conforming to Kinnear standards, this is a door ruggedly constructed of first quality materials. It is practical for many uses in old or new buildings.

Detailed specifications will be supplied upon request.

ROL-TOP MOTOR OPERATOR



ROL-TOP Motor Operators are designed especially for overhead type doors. Model MS, illustrated, suited for any size of door and equipped with proper size motor. Equipped with a magnetic switch, it provides for the door being completely opened or closed by a momentary contact of the control switch. It can be wired with a varied combination of conveniently located operating stations. For

those desiring a less expensive unit, Model SS (like MS, but without magnetic switch, electric brake and with friction clutch) can be furnished for stock doors up to 150 sq. ft. in area but not exceeding 12 ft. in height. With the Model SS, it is necessary to make constant contact of the control switch—hold the button depressed until opening or closing of the door is completed. Motors on both models are of standard make and range from 1/4 hp. up, depending on size of door to be operated.

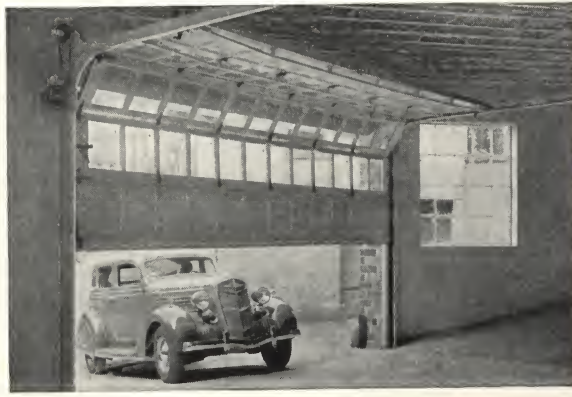
Write for special pamphlet giving more complete details. Where conditions do not permit use of the ROL-TOP operator, one of Kinnear's other type power units may be applicable, in which case recommendations will be made.

SALIENT FEATURES

1. Positive electrically operated brake.
2. Electrical reversible motor.
3. Safety slip clutch.
4. Magnetic reversing switch.
5. Quick detachable draw-bar for emergency operation in case of current failure.
6. Cut gear and pinion.
7. Graphite and bronze oil-less bushings.
8. Accurately, adjustable screw-type limit switch.
9. Belt tension tightener.
10. Three-button wall-mounting operating station.
11. Steel roller chain.
12. Roller and chain take-up.
13. Spring cushioned draw-bar.
14. Low voltage control on standard current.

The Standard ROL-TOP Operator. The traveler on the continuous chain gives a direct center pull on the door, necessitating only a small motor. A convenient, neat and economical arrangement for the majority of needs

Showing a special application of the ROL-TOP Motor Operator and a ROL-TOP Door. Operator directly drives the shaft on which counterbalance spring is placed. Particularly applicable where headroom is at a premium



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SPECIFICATION DATA-ROL-TOP DOOR

DOOR SECTIONS

Construction—Rails and stiles are connected by blind mortise joints glued with casein waterproof glue and securely pinned with steel dowels. No open mortise joints (which permit the joints to absorb moisture and rot) are to be employed. Sections are approximately 2 ft. high and panels approximately 12 in. wide except on special orders. Sections ship-lapped and have graduated end rabbet to fit ROL-TOP special wedge type weatherproof sealing device.

Thickness—Stock and special sizes not exceeding 8 ft. wide and 8 ft. high will be furnished with stiles and rails either $1\frac{3}{8}$ in. or $1\frac{3}{4}$ in. Stock sizes 15 ft. and 16 ft. wide are $1\frac{3}{8}$ in. thick, reinforced with Kinnear's special trussing members. All special sizes exceeding 8 ft. by 8 ft. are $1\frac{3}{4}$ in. thick, with doors over 12 ft. 2 in. wide reinforced with steel truss members.

Reinforcing—All doors over 12 ft. 2 in. in width are reinforced with Kinnear's special steel trussing bar which minimizes the natural tendencies of wood to warp and deflect, increasing door's life of service. Doors under 12 ft. 2 in. in width can be reinforced if specified.

Wood—Stiles and rails of doors of standard design A1 spruce with panels of $\frac{3}{8}$ in. three-ply fir. Special woods and panels can be furnished if specified.

Glass Section—Any number of sections can be arranged for glass. Weight of glass affects counterbalance; therefore, type of glass to be used should be specified. For uniform balance glass of double strength or lighter is preferred. Panels are framed with Ogee $\frac{1}{8}$ in. moulding.

Special Designs—Special woods and special paneling effects can be furnished to meet individual requirements. When such is desired send specifications to Kinnear and special recommendations will be furnished.

COUNTERBALANCE

Deluxe Model ROL-TOP is provided with safety counterbalance; a torsion spring shaft—a single or multiple springs mounted around a solid steel shaft—a principle of counterbalancing employed by Kinnear for 39 years. It provides for simple adjustment, easy erection, quiet operation and safety. Bottom of door is connected to the counterbalance shaft by heavy pliable plow-steel cable operating over ball-bearing sheaves and scored drums of large diameter. The Standard Model ROL-TOP is counterbalanced by two stretch springs, one running parallel to each horizontal track and connected to bottom of the door by pliable plow-steel cable which operates over ball-bearing sheaves.

HARDWARE

Tracks—Moderate size doors equipped with 2-in. steel tracks. Large doors equipped with 3-in. steel tracks. All vertical tracks are mounted on a continuous angle iron, providing a rigid, solid, heavy duty member.

Rollers—Ball-bearing rollers which travel in the tracks are built with a one-piece solid steel case, which operates around a hardened steel ball-bearing race and sleeve. Operating on a shaft made with a shoulder and independent of the hinge it is *free floating* and yet locks the door securely in the tracks.

Hinges, etc.—All hardware applied to door is of malleable iron or manganese bronze of neat design and secured to door with carriage bolts—no screws. Hardware has a high grade protective finish.

Locking Device—A large cylinder lock of standard make in connection with slide bolt fitted with release spring. Lock is placed on right side when facing inside of door, except when otherwise specified. When two or more doors are furnished locks may be keyed separately or alike or can be masterkeyed to other locks as specified.

CLEARANCE REQUIREMENTS

The schedule below gives the headroom and sideroom clearances necessary to install special size doors not requiring any special or auxiliary equipment.

		HEIGHTS					
		UP TO 8'-2" HIGH	8'-3" TO 10'-2"	10'-3" TO 11'-2"	11'-3" TO 12'-2"	12'-3" TO 13'-2"	13'-3" TO 16'-2"
WIDTHS	UP TO 12'-2" WIDE	A	12" HEADROOM 4 1/2" SIDE ROOM PUSHUP TYPE				D
	12'-3" TO 14'-2"	B	12" HEADROOM 4 1/2" SIDE ROOM PUSHUP TYPE				
	14'-3" TO 16'-2"					CHAIN OPERATED 22" HEADROOM	
	16'-3" TO 18'-2"		C	15" HEADROOM 4 1/2" SIDE ROOM PUSHUP TYPE			
	18'-3" TO 20'-2"						

If 12-in. headroom is not available for doors within size limits of brackets A and B, doors can be installed in 8-in. headroom through the use of special equipment.

Sliding Post Installation—Where all doors are under 16 ft. 2 in. in width, a minimum headroom of 20 in. is required. If any door is over 16 ft. 2 in. in width, a minimum of 30 in. is necessary.

Add $6\frac{1}{2}$ in. to the above clearances if motor operation is required.

Where any of the above clearances are not available, it is advisable to write Kinnear to see if any special arrangements can be offered.

SHIPPING DATA

Crated for shipment in sections with hardware applied and other materials, except glass.

AUXILIARY EQUIPMENT

Through various auxiliary equipment, the application of ROL-TOP is very elastic. When needing equipment not listed below, write Kinnear for special data.

Chain Hoist—For operation of large doors by means of endless chain and reduction gearing. Compact unit designed to exactly suit ROL-TOP.

Wicket Door—A small pass or entrance door. May be built within any large ROL-TOP. A very handy arrangement.

Movable Post—Sliding or swinging center mullion to permit the use of two or more doors in a single large opening.

Automatic Opener—For raising a door automatically by the pull of a cord. Especially suited for fire stations.

Lubritorium Design—Special counterbalance and track arrangement for carrying door sufficiently high to permit use of hydraulic lifts.

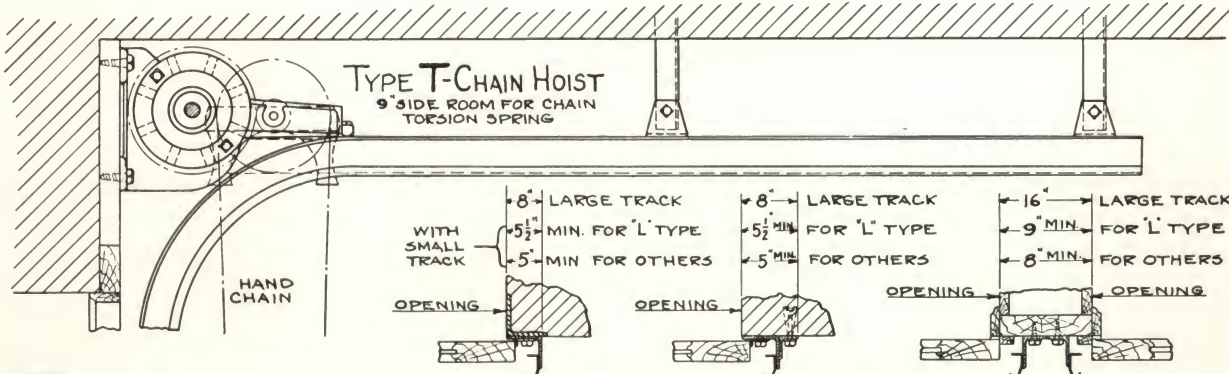
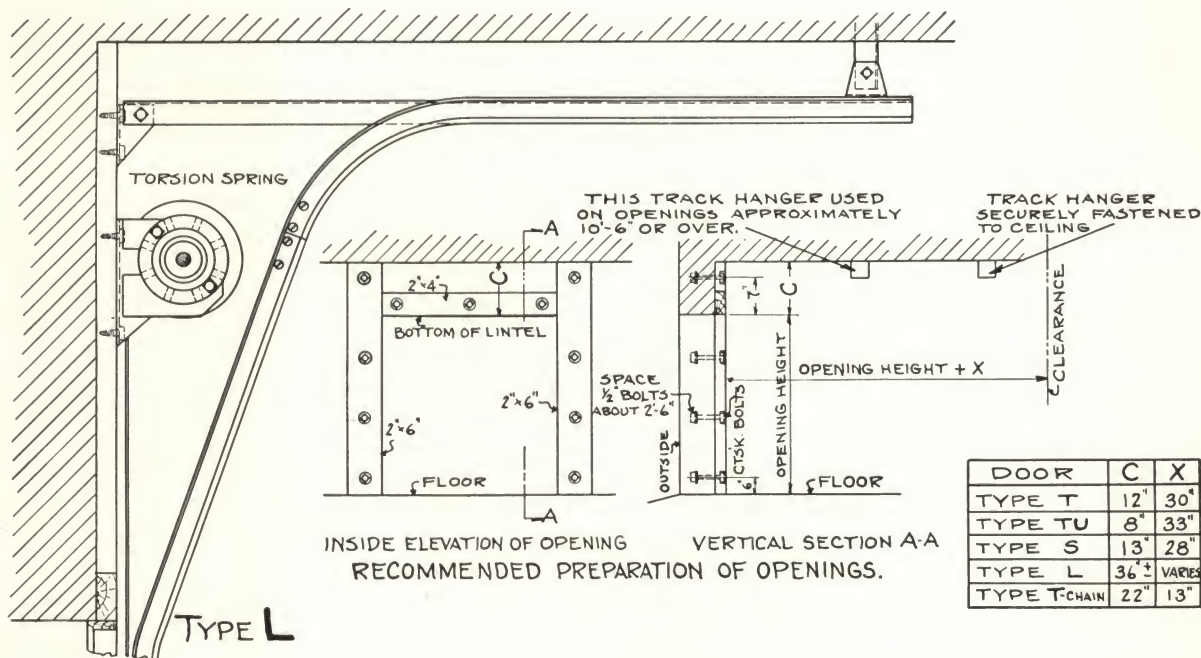
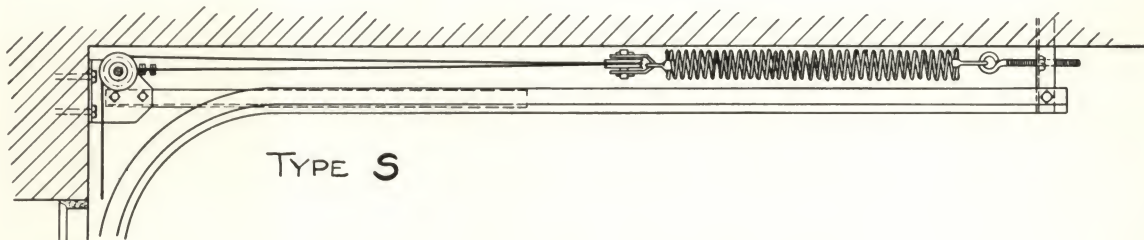
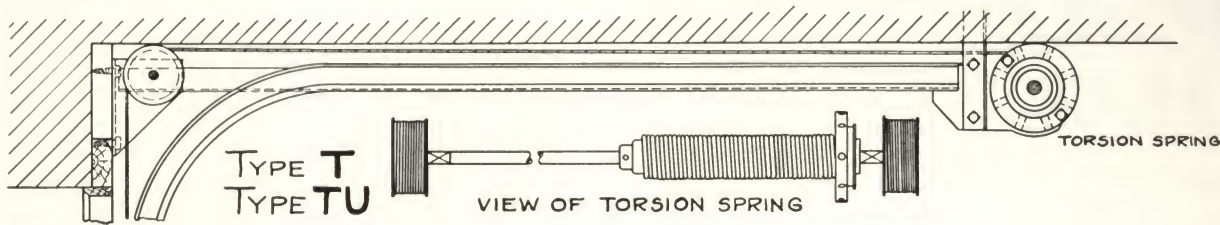
WEATHERTIGHT SEALING DEVICE

The ROL-TOP Door is made weathertight through an ingenious triple-contact arrangement for making it fit tight to the jamb. It consists of a graduated rabbet on both side edges of the door, which is wide at the bottom, decreasing in depth as it nears the lintel. A strip of wood fastened to the 2x6-in. on inside face of wall is placed

in a slanting position to fit snugly in the rabbet when door is closed. This makes a contact in three directions on the end of the door.

This graduation gives the door free action because the instant the door is raised the space between the rabbet and strip steadily increases. A "keystone" in principle.





NOTE:-
FOR INFORMATION CONCERNING
SPECIAL LARGE OR HEAVY DOORS,
CONSULT THE KINNEAR MFG. CO.
ENGINEERING DEPT.

STEEL JAMB MASONRY JAMB INTERMEDIATE POST
TRACK APPLICATIONS ON TYPICAL JAMBS OTHER THAN
2"x6" FRAMING SHOWN ABOVE.

Details of Counterbalance and Clearances Re-
quired for ROL-TOP Doors



TIP-TOP DOOR HARDWARE

Convenient—Economical—Permanent

TIP-TOP is a complete, permanent, simplified set of hardware for converting old or new swinging, folding or sliding garage doors into overhead operation. While designed primarily for the residence garage, it is practical for any opening of a moderate size. As illustrated, the sections of the door are bound into one piece and pivoted by a special lever arrangement on each jamb. Rollers applied to the top corners of the door operate in horizontal over-



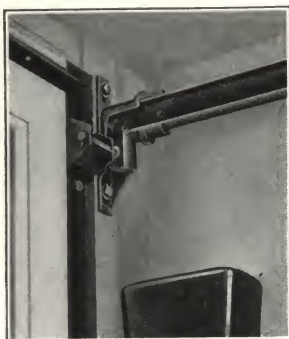
FEATURES

Counterbalance—A "balance-lever" provided with weights, functioning like a balance scale. New in design but incorporating one of the oldest and yet simplest principles of counterbalance. No complicated mechanism, nothing to require adjustment.

Vertical Seal—A 2 in. vertical movement unseals the door, raising it over ground obstructions. This movement not only seals the door to the weatherstrips but also locks it against outside pressure at 4 different points.

Steel Weatherstrips—Provided as integral part of the equipment.

Cylinder Lock—Standard cylinder

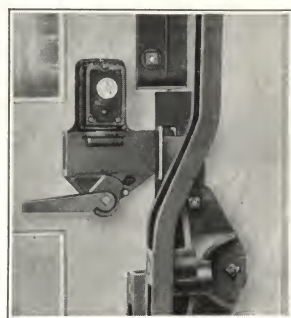


head tracks, so that when the door is swung out it slides back overhead. Weights on the "balance-lever" compensate for the weight of the door, making it easy to operate at any point.

ADVANTAGES

A door equipped with TIP-TOP hardware raises over snow, ice or ground obstructions. Being held, when open, in the overhead position by the strong steel tracks it is safe, stays where it is put, out of the way of wind or moving car, and does not require any floor or wall space. Perfectly counterbalanced it operates easily, quietly and smoothly at any point. When closed, it is weathertight and burglar-proof. Having few moving parts, all of which are ruggedly built, it is a door of exceptional durability. Complete and easily applied, it can be installed with a minimum cost.

Showing the application of TIP-TOP to the standard two section swinging door. Improves appearance of garage and affords year around convenience and operating ease



with rugged lock, operated outside by key and inside by knob.

Weights—Neatly designed. Of varying sizes so their addition or removal will accurately counterbalance the particular door.

Construction—Rugged, simple and fool-proof. Built of best quality materials so as to withstand years of hard, rough usage.

INSTALLATION

Packed as a complete set with detailed installation instructions, TIP-TOP can be easily installed by an ordinary carpenter, with minimum preparation and alteration of the opening.

SPECIFICATIONS

Model A TIP-TOP is suited for doors up to 8 ft. wide by 6 ft. 9 in. to 8 ft. high where the two or more sections do not exceed a total weight of 200 lbs. Requires only 3½ in. headroom and side clearance. Overhead tracks and arch of "balance-lever" requires no special clearances and does not reduce storage space. For information on TIP-TOP suited for larger doors, write Kinnear.

A three-section folding door equipped with TIP-TOP. Sections bound into one piece with angle irons, literally floats up overhead and is held safely in place by the steel tracks



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SPECIAL USES FOR KINNEAR DOORS



KITCHENETTE DOORS

With space at a premium in apartment house design, Kinnear Interlocking Steel Rolling Doors have an important place; for closing off kitchenettes, dressing compartments, and storage compartments. Coiling above, with all mechanism concealed from sight, they require no usable space and are neat when opened or closed. A special flat surfaced slat, permitting any type of decorative finish, is used. Counterbalanced with a spring, they open or close with almost the ease of operating a window shade. They can be made as an integral part of the kitchen cabinets or installed in reveals provided in the building walls. The illustrations show one of 179 Kinnear Doors, 5x7 ft. in size, installed in the Tudor Apartments, New York City. Both the owners and the tenants of the building have expressed considerable enthusiasm over the convenience of these doors.

Though the general design of Kinnear Doors for this purpose is described elsewhere in this catalog, write for special recommendations when considering this type of equipment.

If Kinnear Engineers have the opportunity to work with the architect at the time the building is designed every detail of the installation can be most practically worked out.

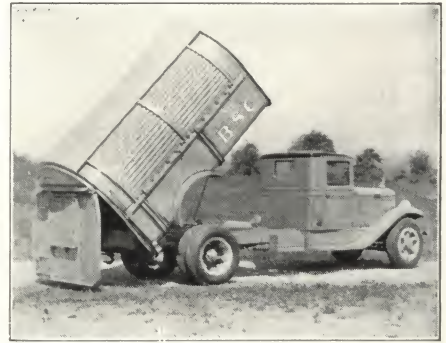
TRUCK DOORS



Garbage trucks used by the city of Baltimore equipped with Kinnear Steel Rolling Doors. Mr. W. Rayner Straus, Baltimore Public Works Engineer, writes in part: "We wish to compliment you on the excellent door you have supplied"

Kinnear Steel Rolling Doors are ideal for numerous styles of trucks. Rolling up in a small compact coil, they are out of the way and allow the truck to run close to the loading platform. Spring counterbalanced, they open or close easily and quickly. When closed, they seal the opening against the elements and dirt. Built of steel, they withstand hard usage, and are burglar-proof and fireproof. In case of accidental damage, one or more of the slats can be quickly replaced.

Kinnear Engineers can design a Steel Rolling Door to exactly suit your truck door needs—whether it be delivery truck, garbage truck or transport truck. Compared to the advantages they afford, you will find Kinnear Truck Doors very reasonably priced. Consult Kinnear when buying additional trucks.



Another purchaser writes: "I am thoroughly sold on your doors and assure you that all my future trucks will be equipped with Kinnear Doors"

MARINE DOORS

While previously used in numerous ways by the marine industry, the design of Kinnear Doors readily suggests itself for many new and practical adaptations to marine use. This is particularly true with the more rigid requirements that are being established for fire protection in ship construction. Having proved their merit as a positive fire guard on commercial and industrial establishments, they are excellent for the protection of ship passageways, stairways, and elevator shafts. They prevent drafts which cause the spread of fire, and also are built to withstand intense heat. By the use of a powerful push-down spring, their automatic closure is made posi-

tive. A safety governor regulates the closing—thus preventing injury to persons in the opening when the door is closed. Counterbalanced at all times, a person can manually raise them to make a quick exit.

The fact that Kinnear recently equipped the hangers on Government airplane carriers with special built doors 38 ft. 8 in. x 17 ft. in size—doors to withstand tremendous water and wind pressures—illustrates in a small way the ability of Kinnear to cope with various marine problems. Write for special recommendations.



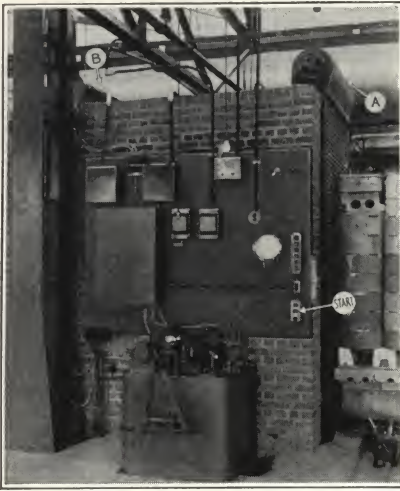
*Left:
Kinnear Doors to close passenger cabins of a jerry in San Francisco Harbor*

*Right:
The prevention of draft and the spread of fire down a ship stairway is accomplished by this Kinnear Fire Door. When open, it is completely concealed*



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CORE OVEN DOORS



The practicability of Kinnear Steel Rolling Doors for core oven use as well as Kinnear's ability to cope with difficult problems can be illustrated by a brief description of this pottery kiln installation. The picture shows the charging end of a pottery kiln. It is provided with two Kinnear Core Oven Doors, so arranged as to form an airlock, thereby making it possible to make the charging operation entirely automatic. Kinnear also furnished the complete electrical control.

The operating cycle is briefly as follows: The attendant presses the "Start" push button, door "B" closes and the pusher equipment returns to pick up the ingoing car. When door "B" reaches its closed position, door "A" opens, allowing the pusher to pick up the loaded car by the front end. The car is then pulled into the vestibule and immediately door "A" closes. As soon as door "A" closes, door "B" opens and the car is pushed into the kiln. This permits approximately one and one-half cars more per day to be run through the kiln as well as reducing the loss from warped ware, and so is quickly paying for this Kinnear installation.

If you have any similar problems, Kinnear will be glad to study the conditions and submit complete and detailed layouts and recommendations. Our specialized door experience insures a practical solution.

X-RAY VAULT DOORS

The door illustrated is a special Kinnear Door installed for the American Manganese Steel Company, Chicago, Illinois, for covering an opening in a large X-ray vault where large steel castings are inspected with X-ray. The situation required particular attention. In order to insulate the door against the penetration of the X-ray, the door required a covering on the inside of lead $\frac{3}{8}$ in. thick. This lead covering was mounted on a wood door of a solid thickness of $2\frac{1}{4}$ in. The total weight of this door and covering was approximately 4500 pounds. The size of the opening was 12 ft. high.

The door is raised in thirty-five seconds and lowered in approximately the same time.

The operation is effected by winding $\frac{5}{8}$ -in. steel cables, which were attached to the door over a large drum driven by electric motor, through gear reduction housed in an oil-tight box. This operator is provided with a dual control, which gives protection against the door over-running and striking either the bottom of floor slot or the stops at the top.



In addition to this type of door, Kinnear Steel Rolling Doors are ideal for X-ray rooms in hospitals, photographic dark rooms, etc. They provide a device for quickly sealing any opening against light.



ROUND HOUSE DOORS

Because of their convenience and saving in space, Kinnear Interlocking Slat Rolling Doors are ideal Round House Doors. Built either in wood, such as described on page 22, or of aluminum interlocking slats, they withstand hard usage as well as withstand the effects of the chemicals present in the atmosphere near a round house.

The illustration at the left shows part of 8 Kinnear Doors, 12 ft. 5 in. x 17 ft. recently installed at Lima for the New York, Chicago, St. Louis Railroad Company. These are built of cypress and operated by chain and reduction gearing.

In the modernization of railroad equipment, Kinnear Doors should be carefully investigated, not only for round house use but also freight sheds, stations, and yard buildings.





Washington, D. C.: The magnificence of the Supreme Court Building is evidence of the care and thoroughness with which the materials used in its construction

were selected. Part of the Kinnear Rolling Doors installed in the large service openings have special perforated slats to provide desired ventilation.

Evidence!

Jobs that tell of Kinnear's Ingenuity and Dependability:

Boulder Dam, Nev.: The fact that a battery of Kinnear Aluminum Rolling Doors were used in this remarkable engineering project is quite significant. The exacting specifications to which the doors had to be manufactured is a further evidence of Kinnear's ability to successfully cope with any opening problem.

New York, N. Y.: In St. John's Terminal, 119 Kinnear Steel Rolling Doors, of which 73 are electrically operated, are giving regular and faithful service.

Chicago, Ill.: The gigantic Merchandise Mart contains 169 Kinnear Steel Rolling Doors—affording its owners and occupants unestimated convenience and economies.

Cincinnati, Ohio: The Union Central Life Building is equipped with 228 Kinnear Rolling Doors and Automatic Fire Shutters.

New York Harbor: Pier 32 and Pier 88, both of outstanding maritime interest, have 401 Kinnear Steel Bifolding Doors—almost 2 miles of continuous doors if placed end to end.

New York Harbor: A large portion of 261 Kinnear Rolling Doors installed in the Port Authority Warehouse are electrically operated. The saving in space alone reaches huge proportions in such a large warehouse installation.

Washington, D. C.: The battery of Kinnear Doors employed in the Federal Warehouse consists of both electrically operated and automatic fire types.

Cincinnati, Ohio: In planning the efficiency of the widely publicized Cincinnati Union Terminal, 71 Kinnear Rolling Doors were called to service.

Syracuse, N. Y.: On the new United States Post Office, a battery of Kinnear Rolling Grilles and ROL-TOP Doors may be seen in daily operation.



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Robert Vail Cole Jr, AIA
1962 - 2011



A KINNEAR *Sales Engineer* *Is Located Close At Hand*

USE HIM WITHOUT ANY
CHARGE OR OBLIGATION

No opening problem is too difficult for Kinnear Engineers. This fact, plus Kinnear's international organization of experienced sales engineers, puts at your disposal expert assistance in the solution of any of your opening problems, regardless of where you may be located.

Branch offices are located in all of the larger cities of the United States. Other principal cities, in this and many foreign countries are serviced by District Salesmen who have long experience in the sale and installation of Kinnear Equipment. All these representatives will offer consulting service without obligation.

If you have a door problem of any kind, call our representative nearest you, and if he is unable to answer your questions he will gladly go to headquarters and get the information that you need. *This is part of Kinnear's Complete Door Service.*

The K I N N E A R *Manufacturing Company*

820-870 FIELDS AVE., COLUMBUS, OHIO

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NEW YORK, 30 Rockefeller Plaza, R.C.A. Building
PHILADELPHIA, PA., 1321 Arch Street
WASHINGTON, D. C., 410 Bond Building
NEW ORLEANS, LA., 530 Hibernia Bank Building

PITTSBURGH, PA., 1052 Century Building

CLEVELAND, OHIO, 7704 Carnegie Avenue
CINCINNATI, OHIO, 6518 Tyne Avenue
DETROIT, MICH., 7710 Woodward Avenue
CHICAGO, ILL., 1919 Randolph Wells Building
SAN FRANCISCO, CALIF., 361 Brannan Street

AGENTS IN PRINCIPAL CITIES

DESIGNED *and* BUILT *to* MEET INDIVIDUAL REQUIREMENTS